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INSECUTOR INSCITIZÆ MENSTRUUS

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No. 1

CONDUCTED BY HARRISON G. DYAR, WASHINGTON, D. C.

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Insecutor Inscitiae Menstruus

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THE title of our publication need not be considered to have any personal application. We endeavor to dispel, to some degree, our general ignorance of the forms of insect life by descriptions of species and genera, life-histories, and other pertinent facts. This publication is undertaken in memory of AUGUSTUS RADCLIFFE GROTE, the best lepidopterist of America, living or dead, whose writings have always been to me a model and an inspiration. In July, 1879, Mr. Grote undertook a small monthly journal, "The North American Entomologist," which, however, was discontinued at the end of the first volume. We hope to conduct this on much the same lines. Whether it lasts longer or not remains to be decided.

HARRISON G. DYAR.

NOTES ON COTTON MOTHS

(*Lepidoptera, Noctuidæ*)

By HARRISON G. DYAR

Without going into the generic synonymy of *Cosmophila*, *Gonitis*, *Aletia*, *Anomis*, and *Alabama*, as these genera will be adequately dealt with by Sir G. F. Hampson in a future volume of the "Catalogue of the Lepidoptera Phalænæ in the British Museum," something may be said on the species concerned. Many of them are known to feed on the leaves of cotton in the larval state, and they are therefore of economic importance. No adequate idea of the group can be had from a study

of the forms occurring in the United States alone, as their appearance is more or less sporadic and the group only enters our country in its most southern part. Therefore the present consideration embraces the species of America as a whole. I have described as new all the species of which I could not readily find descriptions. In a group like this, that has not been catalogued since Guenée's time, descriptions may be easily overlooked, especially if they have been recorded under other generic names, and I consequently shall not be surprised if some of my names prove to be synonyms. The following table will serve to separate the species known to me.

TABLE OF THE SPECIES OF COTTON MOTHS AND ALLIES

Fore wing olive ochreous to red-brown, with a longitudinally elliptical black (rarely white) stigma representing the lower segment of reniform. *argillacea* Hübner
Fore wing without such marking.

Outer line of fore wing straight below the cell and inwardly oblique to inner margin.

Hind wing fuscous to blackish *edetrix* Guenée

Hind wing grayish red *hedys* Dyar

Outer line of fore wing straight below cell and perpendicular to inner margin.

Hind wing of male with the basal area broadly covered with dark red raised scales.

Antennæ of male thickened at basal third *crassicornis* Dyar

Antennæ of male not thickened *regalissima* Dyar

Hind wing of the male without such scales, normal, fuscous.

Inner line of fore wing straight *orthopasa* Dyar

Inner line of fore wing flexuous.

Hind tibiæ of male with fringe of hair on under side, none on upper; patagia broad, swollen, hairy . . . *rufescens* Schaus

Hind tibiæ of male with fringe of long hair on upper side. *eucystica* Dyar

Hind tibiæ of male without fringe of hair.

Male with fovea at base of costa below containing many broad scales; medium sized species.

Subterminal line of fore wing blackish, macular.

. *gymnopus* Dyar

Subterminal line a broad smooth shade.

Small; fringe of fore wing white at base, spotted *stigmocraspis* Dyar

Larger; fringe whitish outwardly, not spotted.

. *hemisopis* Dyar

Male with small fovea at base of costa below, containing a few broad scales; very large species.

. *exaggerata* Guenée

Male without fovea at base of costa . . . *fornax* Guenée
 Outer line of fore wing irregular, forming a sinus below the reniform.

Fore wing angled on outer margin.

Patagia of male short, not exceeding the thorax.

Fore tibiae conspicuously marked with white on outer side.

Bright red; subterminal line with outward silvery gray

spots *rubida* Schaus

Brown; subterminal line blackish, broken, without

pale spots *barata* Schaus

Fore tibiae not marked with white *innocua* Schaus

Patagia of male long, reaching over basal segments of abdomen.

Patagia long but broad and shaggy with red terminal hairs.

flammea Schaus

Patagia very long, pointed, concolorous . . . *patagiata* Schaus

Patagia less long, pointed.

Larger species; longer winged; outer margin concave

above and below the angle; yellow-brown shaded

with fuscous *cataggelus* Dyar

Smaller species; broader winged; outer margin nearly

straight above and below angle; luteous to gray-

brown, finely irrorate *texana* Riley

Fore wing not conspicuously angled on outer margin.

Male with swelling at base of costa conspicuous above, the fovea
 below with long narrow scales.

Patagia of male short, not exceeding thorax; larger species.

luridula Guenée

Patagia of male long, extending over basal segments of
 abdomen; smaller species.

Dark umber brown, the lines picked out by patches of
 white scales *ericina* Druce

Reddish brown with ocher shades; lines dark with
 powdery bluish white edges *œdema* Guenée

Male with swelling at base of costa not conspicuous above.

Apex of fore wing pointed; ocherous to red-brown, lines
 fragmentary, subangular; discal mark obsolete or a
 white patch.

Fore wing below in both sexes shining blackish from
 base nearly to margin *exacta* Hübner

Fore wing below in both sexes rosy throughout, not
 shining *catarhodois* Dyar

Apex of fore wing rounded; without pronounced red tint;
 lines not broken; discal mark a large dark cloud or re-
 placed by whitish *doctorium* Dyar

Outer line of fore wing oblique, joining the inner on inner margin; color
 yellow *erosa* Hübner

Alabama argillacea Hübner.

Smith (Bull. 44, U. S. Nat. Mus., 243, 1893) gives an outline of the synonymy and bibliography and refers to full accounts of the same. This is the well-known cotton worm moth, which in certain years migrates far to the north in large numbers in the fall of the year. This was notably the case in 1911 and to a less extent this year (1912), though the phenomenon had not been previously witnessed for many years. The larva feeds on cotton in our southern States. Specimens are before me from Brazil, Peru, Venezuela, Costa Rica, Mexico, Barbados, and Cuba, and from the United States to the Canadian border, even from Ontario, Canada.

Cosmophila erosa Hübner.

This species is distributed from Argentina to our southern States, Texas, Louisiana, Mississippi, and Missouri, and along the Atlantic coast as far as Washington, D. C. The larva feeds on *Urena lobata*, *Abutilon avicennæ*, and *Malva rotundifolia*, according to Riley. The species occurs also in the Old World, being treated by Hampson in the "Moths of India." A specimen is before me from New Zealand, bred from *Hibiscus*. The Old World form tends to have darker hind wings than ours, some being quite blackish, but the New Zealand specimen is not darker than one from Paraguay before me. Synonymy is given in Staudinger and Rebel's catalogue (Catalog der Lepid. des Palæarctischen Faunengebietes, 234, 1901) and American references by Smith (Bull. 44, U. S. Nat. Mus., 241, 1893).

Gonitis edetrix Guenée.

Gonitis edetrix Guenée, Spec. Gen. Lep., vi, 404, 1852.

This very characteristically marked species extends from Brazil to Mexico, including Peru, Venezuela, Cuba, and Bermuda. I have two specimens taken in Japan (Yokohama, H. Loomis), but this perhaps represents an accidental importation, since the species is not recorded in Staudinger and Rebel's catalogue.

Gonitis hedys, new species.

Fore wing rosy brown, thickly irrorated with blackish; inner line pale, oblique, and parallel to lower half of outer line, somewhat irregular; a small black dot in cell; reniform narrow, constricted, blackish; outer line pale, outcurved over cell, dislocated inward between veins 5 and 6,

running in below on vein 3, then straight and inwardly oblique to inner margin; veins of terminal area pale lined; subterminal shade blackish, undulate. Hind wing pale salmon red with grayish tint. Expanse, 45 mm.

Type, male, No. 15394, U. S. N. M., Baracoa, Cuba (A. Busck).

Anomis crassicornis, new species.

Bright red, with dense yellow irroration. Fore wing of the male with down-turned woolly hair at base above; costa slightly swollen at base and with a fovea beneath containing a few modified scales. Antennæ thickened on the upper side at about the basal fourth. Hind wing with woolly hair above at base, the scales erected to about three-fourths of the wing. Inner line dusky, faint; outer more distinct, strongly excurved over cell, with median excavation, straight below reniform and perpendicular to inner margin; orbicular a white point; reniform two white dots, the upper small; subterminal shade blackish, undulate, submacular. Hind wing with the marginal fourth gray. Expanse, 45 mm.

Cotypes, two males, No. 15395, U. S. N. M., Songo, Bolivia (Schaus collection).

The specimens were apparently purchased from Staudinger. One bears a label "*Gonitis superba* Stgr." on the reverse of which is "v. *rex* Boisd." I have been unable to trace these names.

Anomis regalissima, new species.

Entirely similar to *A. crassicornis* Dyar in color and markings, differing in the male secondary characters. Antennæ uniform, not swollen near base; fore wing with only a little woolly hair at base; swelling at base of costa a little larger than in *crassicornis* but not conspicuous, the fovea beneath little developed. Hind wing with the red hairs somewhat less roughened than in *crassicornis*. Expanse, 53–56 mm.

Cotypes, two males, No. 15396, U. S. N. M., Chaco, Bolivia; Loja, Ecuador (Schaus collection), the former apparently purchased from Staudinger, the latter from the collection of M. Paul Dognin.

Anomis exaggerata Guenée.

Anomis exaggerata Guenée, Spec. Gen. Lep., vi, 398, 1852.

Rather smaller than the preceding, but similar. The hind wings have no red scales. The antennæ are simple; the fovea at base of costa beneath has broad silvery modified scales. Two males and three females from Brazil are before me.

Anomis rufescens Schaus.

Anomis rufescens Schaus, Ann. Mag. Nat. Hist., (8), vii, 80, 1911.

This and the following five species are all very much alike in color and markings, the females being scarcely separable. The males separate easily on the modifications of the patagia and presence or absence of hair on the hind tibiæ. The present species has the patagia remarkably swollen and hairy.

Anomis eucystica Dyar.

This will be described in my fourth paper on Mexican Lepidoptera to appear in the Proceedings of the United States National Museum. Besides Mexican specimens, I have a male from Costa Rica which Mr. Schaus has labeled "*Anomis fornax* Gn. in B. M." but perhaps attention was not paid to the secondary sexual characters. The superficial appearance is exactly that of *fornax*. I have also a male from Chanchamayo [Peru] that is apparently the same species.

Anomis stigmocraspis, new species.

Male with swelling at base of fore wing inconspicuous; patagia normal; mid tibiæ with dense hairs above; hind tibiæ without long hairs. Fore wing tawny gray to reddish, irrorated with brown, the margin darkly shaded; lines dark, pale-edged, the pale generally predominating; the lower straight segment of the outer line often joined with the reniform to make the appearance of a straight line nearly across the wing; discal dots small, faint, or the lower segment of the reniform marked with white; fringe white or whitish, with blackish spots between the veins, the central angle prominent, dark. Hind wing blackish. Expanse, 27 mm.

Cotypes, two males, four females, No. 15399, U. S. N. M., Bonito Province, Pernambuco, Brazil, February, 1883 (A. Koebele).

The specimens are very small, but as they seem to have been all bred (presumably on cotton), they may be undersized. I believe that this is what Hübner represents as the female of *Anomis exacta*. The male, carrying the name, I identify as another species.

Anomis gymnopus Dyar.

This species also will be described in my fourth Mexican paper. Besides the male type there is a female, very red, from Chiriqui [Panama] (Ribbe) labeled "*Anomis humeralis* Gn." but I am unaware of any such species.

Anomis fornax Guenée.

Anomis fornax Guenée, Spec. Gen. Lep., vi, 398, 1852.

This species is readily recognized by the lack of development of secondary sexual characters in the male. The males might easily be taken for females. All my specimens are from the Guianas.

Anomis hemiscopis, new species.

Male with large fovea at base of costa beneath; hind tibiae without fringe of hairs. Markings as in *A. fornax* Gn. but brighter, redder, with contrasting darker shades. Males readily separable from females by the swollen costal base. Expanse, 30–33 mm.

Cotypes, five males, two females, No. 15397, U. S. N. M., Casa Branca, Rio Janeiro, and Petropolis, Brazil (Schaus collection); Peru (Schaus collection); Bolivia (Schaus collection), all labeled "*fornax* Gn." but differing as pointed out. Apparently allied to *A. obtusa* Dognin and *A. albipunctillum* Dognin (Het. nouv. de l'Am. du sud, vi, 27, 1912), but I cannot place these species from the descriptions, as the male characters are not given.

Anomis orthopasa, new species.

Dark brown, the lines straight, pale; inner line almost perfectly straight across the wing from costa slightly outwardly oblique to inner margin; discal mark an erect pale line; subterminal shade dark, waved. Expanse, 34 mm.

Type, female, No. 15398, U. S. N. M., Baracoa, Cuba, November, 1902 (W. Schaus).

A second specimen from Jalapa, Mexico (Schaus collection), is the same, but with a red shade along submedian. This latter may prove a variation of *rufescens* or *eucystica*. The species is based on the Cuban example. *A. directilinea* Schaus (Ann. Mag. Nat. Hist., (8), vii, 78, 1911) may be this species, but the type is not before me, Mr. Schaus not as yet having deposited it in the National Museum.

Anomis barata Schaus.

Anomis barata Schaus, Ann. Mag. Nat. Hist., (8), vii, 79, 1911.

This and the six following species have the outer margin of fore wing angled and the outer line with a sinus below the reniform. The patagia are modified in the males of some as secondary sexual characters. Of *barata* I have only the types from Costa Rica.

Anomis rubida Schaus.

Anomis rubida Schaus, Ann. Mag. Nat. Hist., (8), vii, 79, 1911.

Very close to *barata* Schaus. A trifle smaller; fore wing and thorax bright dark red, all the markings touched with silvery gray. Secondary sexual characters as in *barata*. Only the type female and one male are before me.

Anomis patagiata Schaus.

Anomis patagiata Schaus, Ann. Mag. Nat. Hist., (8), vii, 80, 1911.

Readily recognized by the long patagia of the male. The females vary from red to chocolate brown and umber brown. Besides the types from Costa Rica, I have a series from Mexico labeled "*exacta* Hübn.," which is seen to be a misidentification in the light of present knowledge.

Anomis cataggelus Dyar.

This will be described in my fourth Mexican paper above alluded to. I have a series of 15, all from Mexico, and very uniform in appearance. The long, angled wings, umber brown color, and large dark, clouded reniform are characteristic. Females, however, are very difficult to separate from *patagiata* Schaus.

Anomis innocua Schaus.

Anomis innocua Schaus, Ann. Mag. Nat. Hist., (8), vii, 80, 1911.

A small, dark, inconspicuous species, of which only the single male type is before me.

Anomis flammea Schaus.

Anomis flammea Schaus, Trans. Am. Ent. Soc., xxi, 238, 1894.

The patagia are broad and tufted strongly with dark crimson scales; wings fiery red; the pouch at base of costa beneath is filled with white wool. A very striking but small species. Five specimens are before me, all from Mexico.

Anomis texana Riley.

Anomis texana Riley, 4th Rept. Ent. Comm., 350, 1885.

A distinct species, not a synonym of *luridula* as given in Bulletin 52, U. S. Nat. Mus. Swelling at base of costa of male not conspicuous above, but the fovea below well filled with modified scales. The male patagia are elongated, covering two segments of the abdomen. Two males and three females from Riley's bred types from Texas are before

me; also four females from Mexico (Schaus collection and R. Müller) and a male from Guatemala (Schwarz and Barber).

Anomis luridula Guenée.

Anomis luridula Guenée, Spec. Gen. Lep., vi, 401, 1852.

Anomis derogata Walker, Cat. Lep. Het. Brit. Mus., xiii, 990, 1857.

Anomis umbrata Schaus, Ann. Mag. Nat. Hist., (8), vii, 81, 1911.

Ranges from Mexico to the Guianas. Mr. Schaus's type of *umbrata* is large and dark, but not abnormal. I have specimens from Mexico like it. Others from Nicaragua, Panama, and French Guiana are before me. The male has a long swelling at base of costa, very conspicuous above.

Anomis exacta Hübner.

Anomis exacta Hübner, Samml. exot. Schmett., i, 1810.

• *Anomis impasta* Guenée, Spec. Gen. Lep., vi, 400, 1852.

• *Anomis illita* Guenée, Spec. Gen. Lep., vi, 400, 1852.

• *Anomis conducta* Walker, Cat. Lep. Het. Brit. Mus., xiii, 990, 1857.

• *Aletia hostia* Harvey, Can. Ent., viii, 6, 1876.

Taking the male of Hübner's figure as type, it seems to me to agree best with the present species. The species varies considerably in color, and the markings are often very faint or obliterated, especially in females. The swelling at base of costa of the male is elongated and rather well developed, but not conspicuous. The species is rather small. I have specimens from Mexico to Brazil, including a number from Cuba. It also occurs in Texas.

Anomis oedema Guenée.

Anomis oedema Guenée, Spec. Gen. Lep., vi, 399, 1852.

Similar to *exacta*, but rather larger, the outer margin more prominently bent, the markings bright, the ground color varied with ochreous. The large elongate swelling at base of costa of male is characteristic. My specimens are from the Guianas and Panama.

Anomis aricina Druce.

Anomis aricina Druce, Biol. Cent.-Am., Lep. Het., i, 337, 1899.

Like *oedema*, the costal swelling less pronounced, the color dark brown to reddish, the lines marked with bluish white scales, except the subterminal, which is obsolescent. Mexico, Costa Rica, Guatemala, Panama.

Anomis catarhodois, new species.

Rosy brown, the markings light and obsolescent; reniform large and blotched with silvery gray, or obsolescent. Beneath the fore wings are rosy throughout, without the shining gray shading of *exacta*. Expanse, 30–32 mm.

Cotypes, male and female, No. 15400, U. S. N. M., Baracoa, Cuba, January, 1903 (W. Schaus).

Anomis doctorium,* new species.

Basal costal swelling of male inconspicuous above, the fovea beneath well developed, containing silky white hair; white anal tufts also in the male, one on each clasper and three on the penultimate segment, of which one is lateral on each side and a single ventral one; all the legs without hair-tufts; antennæ simple. Fore wing with the outer margin convex, apex blunt. Varies in color from ocher to dark brown, never gray or bright red. Lines slender, blackish, the light defining shades not prominent and not contrasted with the ground color, sometimes absent; orbicular a white point surrounded by a dark shade; reniform a large blackish cloud, sometimes replaced by white; lines very wavy, the outer forming a sinus below the cell; subterminal shade blackish, with a more or less evident pale sinuous subterminal line through it. Hind wing more or less shaded with brown, never completely so, often largely pale. Expanse, 30 mm.

Cotypes, two males, two females, No. 15401, U. S. N. M., selected from a series, Bonito Province, Pernambuco, Brazil, February, 1883, bred from larvæ on cotton (A. Koebele).

Besides the types, I have placed 87 specimens in the collection, of which one is from Cuba (E. A. Schwarz) and 6 from Barbados (H. A. Ballou).

SPECIES OCCURRING IN THE UNITED STATES

Alabama argillacea Hübner.

Well known to occur in the United States as flights of moths in the fall, reaching Canada (Port Hope, Ontario, Bethune), but the extent of its breeding here has probably been exaggerated, the larvæ having no doubt been confused. There are specimens bred from cotton before me

*This is the genitive plural of the Latin word *doctor*. Bibliographers will please not "emend" it into *doctoria*, which would spoil the sense. It is given in commemoration of the able (?) manner in which this species was identified by the doctors.

in the National Museum collection. A small female is labeled "fed on *Ipomæa*, Selma, Alabama, September, 1880," presumably by C. V. Riley. The larvæ are long and slender, the tubercles black and distinct; abdominal feet all present, the pair on joint 7 small; dorsum varying in extent of black marking.

***Cosmophila erosa* Hübner.**

A regular inhabitant of the United States as far north at least as Washington, D. C., breeding on several native plants but not on cotton. Apparently not migratory. The larva is slender, green, without conspicuous tubercles or marking; abdominal feet of joint 7 absent, those of 8 small.

***Anomis texana* Riley.**

Occurs on cotton in Texas, the type having been bred from that State. I have no records of more northern distribution; it ought to occur throughout the Gulf States. The larva is not as slender as that of *argillacea*, is darkly marked, but without black tubercles. The abdominal feet of joint 7 are absent, those of 8 slender and reduced.

***Anomis exacta* Hübner.**

This occurs in Texas, the synonym *hostia* Harvey having been described from that State. A specimen is before me from San Antonio, collected December 1, 1895 (E. A. Schwarz). I have no record of a more northerly distribution. The larva is unknown to me. Riley's record of *exacta* from Texas refers to *texana*.

SPECIES PROBABLY NOT OCCURRING IN THE UNITED STATES

***Anomis luridula* Guenée.**

Recorded from the Gulf States by Smith (Bull. 44, U. S. Nat. Mus., 242, 1893), but probably based on erroneous identifications. Dr. Riley labeled a specimen of *doctorium* Dyar from Brazil "*derogata* comes nearest to this form and is evidently the same." On the strength of this the Brazilian *doctorium* have been in the North American series of *luridula* for 30 years. With them were later confused the types of *texana*; the two are very much alike in markings. No true *luridula* were in the series. This species is larger, smoothly colored, with the wing shape and facies of *argillacea*, with which it might easily be confused except for the different angle of the reniform. What Riley and Smith called *luridula*

from the United States was therefore not this species, unless their material has disappeared from the collection. I do not know what it was, but imagine that the Brazilian *doctorium* (called *derogata* = *luridula*) had been in the collection so long that it was supposed they must be North American.

Anomis doctorium Dyar.

I have no specimens from the United States, though, as it occurs in Barbados and Cuba, its occurrence here would not be unlikely. The record of *luridula* Gn. from the United States, noted above, may be based on this species, though I think not; I think that to be simply a confusion of mind. This species is evidently not migratory, though very abundant locally on cotton. Koebele collected by far more of this species in Brazil in 1883 on cotton than any other.* The larvæ preserved by him resemble those of *texana* rather closely. They are mostly heavily marked, the dorsum nearly solidly vinous black, the tubercles small, black, as in *texana*. Some lightly marked forms occur and even nearly immaculate green ones, although I cannot tell whether these may not be larvæ of *erosa*, which Koebele also took, as names of food plants are not attached. The structure of the feet does not separate these. The differently colored larvæ are numbered differently and perhaps the puzzle is capable of solution by sufficient research in old files. It does not seem to me worth the trouble in the present connection.

*Koebele collected long series of other species in the Brazilian cotton fields. The migratory cotton moth, *Alabama argillacea*, seems to have been present in only small numbers, and Koebele preserved no specimens of its larva among the series of inflated specimens. Our familiar *Laphygma frugiperda* S. & A. was there, *Xylomyges sunia* Guenée in some numbers, a few *X. eridania* Cramer, but especially abundant were *Perigea concisa* Walker, *P. sutor* Guenée, and *Bagisara subusta* Hübner. It would seem as if, provided all these insects were feeding on the cotton, that there should not have been a leaf left in those Brazilian cotton fields. The circumstances are partly explained in the report of J. C. Branner, published as Appendix V to the 4th Rept. U. S. Entomological Commission. It is stated that Koebele caught the moths from flowers that grew about the house where he stayed. Only a small proportion were cotton moths. The investigations at Bonito extended over January and February. January 8 eggs and larvæ of *doctorium* were found and the first moth issued January 23. No *argillacea* appeared until February 6. This species is therefore later in appearance than *doctorium* and may have been abundant enough afterwards.



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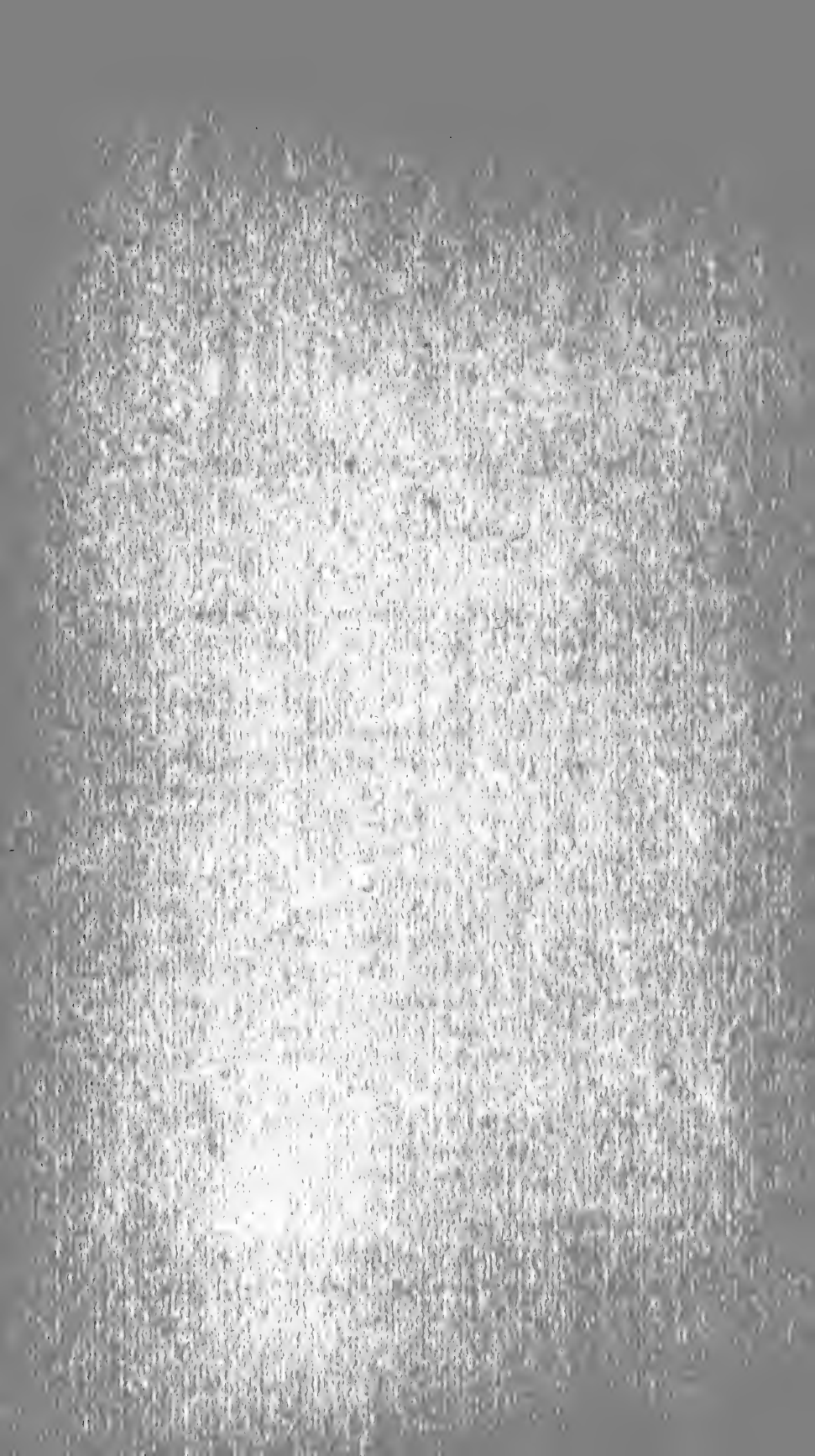
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SOME NEOTROPICAL SYRPHIDÆ

(Diptera)

By FREDERICK KNAB

Quichuana, new genus.

In the majority of characters and in appearance agreeing with *Elophilus*; differs in the hairy eyes, narrower front, and the more prominent antennæ with elongate third joint.

Wings with the marginal cell open, anterior cross-vein beyond middle of discal cell, third vein with a deep loop into first posterior cell. Antennæ prominently inserted, third joint elongate, flattened, parallel-sided, at least twice as long as broad, rounded at apex; arista bare, inserted close to base. Abdomen depressed, broad throughout. Hind femora much thickened, without distinct tooth; hind tibiæ arcuate.

Approaches nearest to *Myiathropa* Rondani (type *Musca florea* Linné), but differs from it in the elongate third antennal joint, the incrasate femora and strongly arcuate tibiæ of the hind legs. Only females are before me and in these the frons agrees in shape with *Myiathropa*. If my suspicions that *Mallota championi* Williston (Biol. Centr. Amer., Dipt., vol. 3, p. 69, 1902) belongs here are correct, the male has the eyes contiguous as in *Myiathropa*. Although the present genus seems rather weakly defined I have preferred creating it, rather than assign the insects in question to a genus with which some of the characters conflict and thereby add to the already existing confusion.

Type: *Quichuana sylvicola*, new species.

Quichuana sylvicola, new species.

Female: Antennæ inserted above middle of head, their insertion well produced. Frons narrow at vertex, not exceeding the width of ocellar

callus, widening to below insertion of antennæ, the face beyond that point nearly parallel-sided; face shallowly depressed below base of antennæ, the lower two-thirds somewhat swollen and with a moderate median callosity that does not extend to the somewhat produced oral margin. Frons and face black; frons with hair surrounding ocellar callus black, below this with golden yellow pubescence, densest along orbits; face with scattered yellowish white hairs and with dirty whitish pruinosity, the median callosity and an area to each side of it shining black. Antennæ piceous, geniculate, the first and second joints short, the third elongate, broad, flattened, about twice as long as broad, rounded at apex; arista naked, pale ferruginous. Eyes with distinct whitish pubescence.

Thorax dull black with traces of paler pruinosity medianly in front and at anterior angles; a tuft of ferruginous hairs before insertion of wings. Scutellum black. Pleuræ black with groups of pale yellowish hairs.

Abdomen depressed, tapered posteriorly, dull black above, the second segment clothed with rather long and dense yellowish pubescence; third segment with long rather sparse yellow pubescence at sides anteriorly; fourth and fifth segments with yellowish pubescence along anterior margins.

Femora and tibiæ shining blackish, the knee-joints ferruginous, the pubescence pale. Femora much thickened, but without distinct tooth; tibiæ arcuate and somewhat compressed on the distal half. Tarsi ferruginous, somewhat darkened distally.

Wings infuscated, darkest along costa and along a fold in the submarginal cell; a fuscous spot at the upper end of the anterior crossvein. Squamæ broadly margined with black, the fringe ferruginous. Halteres pale with ferruginous knobs.

Length: Body about 9 mm., wing 9 mm.

Chanchamayo, Peru (collection Rosenberg); one female.

Type: Cat. No. 15503, U. S. Nat. Mus.

Quichuana picadoi, new species.

Female: Very similar to *Quichuana sylvicola*; wing venation, general coloration, shape of frons and antennæ as in that species. The face more prominent and less excavated below antennæ; pubescence of frons and face, with exception of black hairs on ocellar callosity, entirely pale. Mesonotum and scutellum with dirty yellowish white pubescence. Pubescence of abdomen arranged as in the preceding species, but much more abundant and entirely dirty yellowish white. Femora black; tibiæ dull

ferruginous, marked with black near the apex; tarsi basally ferruginous, the second joint partly and all of the last three black; hind tibiae less flattened and more abruptly bent than in *Q. sylvicola*. Wings hyaline, a trace of infuscation apically in the costal region, along the submarginal cell and at upper end of anterior crossvein.

Length: Body about 8 mm., wing 7.5 mm.

Costa Rica, bred from epiphytic bromeliads (C. Picado); one female.

Type: Cat. No. 15504, U. S. Nat. Mus.

Three localities are given in the memorandum of Mr. Picado accompanying the single specimen. These are: Orosi, 1,100 meters (November to January); Cartago (September); Estrella (September).

The specimen is in poor condition, having been preserved in spirits, and, since being mounted, attacked by Dermestidæ. The specimen is much more pubescent than the species just described from Peru, but this latter specimen is obviously somewhat worn.

It is possible that the *Mallota championi* of Williston, already mentioned in the generic discussion, is the male of the species here described, but this can not be decided without study of the type, as even the generic position cannot be satisfactorily determined from the description.

This is an appropriate occasion to record the occurrence of syrphid larvæ, of the *Eristalis* or "rat-tailed" type, in epiphytic Bromeliaceæ. They were found by the writer at Córdoba, Mexico, in March, 1908. These larvæ were creamy white with an extremely long and slender respiratory filament. They occurred abundantly in the water held by the leaf-bases of bromeliads growing high up on the branches of a large mango tree. Unfortunately circumstances prevented my rearing these larvæ. Whether these larvæ belong to the genus here described or to the genus *Eristalis* itself, future investigation must decide.

NAMES AND SYNONYMY IN ANOPHELES

(Diptera, Culicidæ)

By FREDERICK KNAB

In 1908 (Proc. U. S. Nat. Mus., vol. 35, p. 53) Dr. Dyar and the writer proposed the name *Anopheles cruzii* for the species described by Theobald as *Anopheles lutzii* in 1901 (Mon. Culic., vol. 1, p. 177), that name having been already applied to a different species by Cruz earlier in the same year (Brazil Medico, vol. 15, p. 423). Recently,

in referring to the fourth volume of Theobald's Monograph, I was struck by the familiar appearance of the figure of the wing of *Kerteszia boliviensis* (p. 119), an *Anopheles* we had not previously associated with any species known to us. Reference to a proof-plate of the forthcoming Carnegie monograph on mosquitoes showed that the wing-pattern of *Anopheles boliviensis* is identical with that of Theobald's *Anopheles lutzii*. Further comparison of a specimen of *A. lutzii* collected by Dr. A. Lutz in São Paulo, Brazil, the type locality, showed that the only discrepancies were such as were plainly due to inaccuracies in the description. All doubts as to the identity of the two forms are dispelled by a series of ten *Anopheles* from the same general region as *A. boliviensis*, sent to the Bureau of Entomology by Prof. C. H. T. Townsend, Entomologist for the Peruvian Government. These specimens are from the forests of the eastern slopes of the Peruvian Andes, the so-called Montaña, and were taken on the Rio Charape, September 13, 1911, and at Huascaray, September 22, 1911. Comparison of these specimens with the description of *A. boliviensis* and with the specimen of *A. lutzii* from Dr. Lutz puts the synonymy beyond question. The only observable difference between the Brazilian specimen and those from Peru is that on the hind tarsi the black line along the dorsal surface of the first segment is somewhat heavier in the latter; but there is only one Brazilian specimen for comparison and the difference is not one of significance. *Kerteszia boliviensis* was first described in 1905 (Ann. Mus. Nat. Hung., vol. 3, p. 66) and the specific name therefore takes precedence over *A. cruzii*, proposed by Dyar and Knab in 1908.

Theobald's description of *Kerteszia boliviensis* is rather misleading. He omits to mention the white rings on the palpi and one does not get the impression of the preponderance of white on all the hind tarsal joints which is so characteristic of the species. The statement that the species is a remarkably large one is surely attributable to an error, for the species is of rather small stature. Furthermore, his figure of the thoracic ornamentation is inaccurate; the two outer stripes are broader and straighter, and continue to the posterior margin of the mesonotum. Nevertheless this figure more nearly resembles *A. lutzii* than does the one originally given for that species.

The habits of *A. boliviensis* were first made known by Dr. A. Lutz. The larvæ occur exclusively in the water held by the leaves of epiphytic Bromeliaciæ and the insect is consequently strictly a forest species. The

habits and supposed disease-relation have been set forth in a most interesting article by Lutz, "Waldmosquitos und Waldmalaria" (Centralbl. f. Bakt., etc., Abt. 1, vol. 33, pp. 282-292, 1903; Abstract in Journ. Trop. Med., vol. 6, pp. 111-113) and recently have been discussed by the writer (Journ. Econ. Ent., vol. 5, p. 199, 1912; Proc. Ent. Soc. Wash., vol. 14, p. 81, 1912).

There are two other closely related species, which, like *A. boliviensis*, breed exclusively in water-bearing bromeliads. One of these (*A. bellator* D. & K.) occurs on the island of Trinidad, and probably also on the adjoining mainland; the other ranges from Panama northward to the moist forest regions of southern Mexico.

The numerous "genera" of anophelines, which have been in great part responsible for the confusion and synonymy created, have been repeatedly discussed by Dr. Dyar and the writer. Recently opinions similar to our own have been expressed by Alcock ("Remarks on the classification of the Culicidæ, with particular reference to the constitution of the genus *Anopheles*," Ann. Mag. Nat. Hist., ser. 8, vol. 8, 1911, pp. 240-250) and Edwards ("Some new West African species of *Anopheles* (sensu lato), with notes on nomenclature," Bull. Ent. Research, vol. 2, 1911, pp. 141-143; "A key for determining the African species of *Anopheles* (sensu lato)," Bull. Ent. Research, vol. 3, 1912, pp. 241-250). The synonymy of *Anopheles lutzii* of Theobald now stands as follows:

***Anopheles boliviensis* (Theobald).**

Anopheles lutzii Theobald (not Cruz), Mon. Culic., vol. 1, p. 177, 1901.

*Anopheles lutzii*¹ Theobald (not Cruz), Mon. Culic., vol. 3, p. 51, 1903.

Anopheles lutzii Lutz (not Cruz), Centralbl. Bakt., etc., Abt. 1, vol. 33, p. 283, 1903.

Anopheles lutzii Lutz (not Cruz), Journ. Trop. Med., vol. 6, p. 112, 1903.

Myzomyia lutzii Theobald, Gen. Ins., Dipt., Fasc. 26, p. 8, 1905.

Kerteszia boliviensis Theobald, Ann. Mus. Nat. Hung., vol. 3, p. 66, 1905.

Myzomyia lutzii Theobald, Mon. Culic., vol. 4, pp. 41, 42, 1907.

Kerteszia boliviensis Theobald, Mon. Culic., vol. 4, p. 118, 1907.

Anopheles cruzii Dyar & Knab, Proc. U. S. Nat. Mus., vol. 35, p. 53, 1908.

Myzomyia lutzii Peryassú, Culic. do Brazil, p. 78, 1908.

Myzomyia lutzii Theobald, Mon. Culic., vol. 5, pp. 16, 18, 1910.

Kerteszia boliviensis Theobald, Mon. Culic., vol. 5, p. 74, 1910.

Anopheles cruzi Knab, Journ. Econ. Ent., vol. 5, p. 199, 1912.

Anopheles cruzii Knab, Proc. Ent. Soc. Wash., vol. 14, p. 81, 1912.

¹ There is some doubt that the observations there recorded really apply to this species.

THE SPECIES OF SPHIDA GROTE

(Lepidoptera, Noctuidæ)

By HARRISON G. DYAR

The genus *Sphida* is recognized for a single North American species, *obliqua* Walker. I find that there are several forms referable to *Sphida* which have been confused. Apparently all the species live as borers in *Typha* in the larval state, which has helped to the confusion of the species, it apparently having been assumed that but one species would inhabit a single food plant. The following table has been constructed to separate the forms before me. All have a tubercle on the front of the head, though its size and development varies greatly, even in the same species.

TABLE OF SPECIES OF SPHIDA

Reniform mark of fore wing narrow, oblique; base of wing whitish at costa.	
	<i>obliqua</i> Walker
Reniform mark widely elliptical, not strongly oblique.	
Base of fore wing whitish on costa; anal tuft of female not white.	
Frontal tubercle small; anal tuft of female black	<i>gargantua</i> Dyar
Frontal tubercle large; anal tuft of female concolorous with abdomen.	
	<i>pleostigma</i> Dyar
Base of costa of fore wing not whitish, concolorous or pinkish; anal tuft of female white.	
Smaller; markings distinct, orbicular and reniform light reddish.	
	<i>æcogenes</i> Dyar
Larger; markings indistinct, orbicular and reniform dark rusty red.	
	<i>anoa</i> Dyar

Sphida obliqua* Walker.Edema obliqua* Walker, Cat. Brit. Mus., xxxii, 428, 1865.*Arzama obliquata* Grote & Robinson, Trans. Am. Ent. Soc., i, 339, 1868.*Sphida obliqua* Hampson, Cat. Lep. Phal. Brit. Mus., ix, 259, 1910.

I have specimens of this species from Buffalo and Rochester, N. Y., and Washington, D. C. (Department of Agriculture, No. 2367).¹ The species is no doubt more widely spread. Hampson gives also Canada, Massachusetts, New Jersey, Ohio, Florida, and Colorado, which may be provisionally accepted, although it is possible that some of the following species may have been confused. The larvæ live in cat-tails (*Typha*)

¹ The notes under 2367 are in an unsatisfactory state, as no record was made of the specimens bred in 1882, nor is the food plant mentioned at all. Both *obliqua* and *æcogenes* were bred at different times, but no distinction was noted between them and the records are hopelessly confused.

and are curious in being black, with the last pair of spiracles directed posteriorly like a dipterous larva. They come to land to pupate. I once found one crawling in a dusty road in New Hampshire at some distance from a swamp.

***Sphida oecogenes*, new species.**

Of a reddish brown, without whitish shade at base of costa, though that area is lighter than the rest of the wing, especially in males, and somewhat pinkish; no blackish shade beyond through the middle of the wing, the shade being brown and not contrasted; reniform wide, elliptical, light red with brighter center, oblique, but not strongly so; median shade line fairly distinct; outer line crenulate; termen dark grayish filled. Anal tuft of female white. Expanse, 30–35 mm.

Cotypes, two males, four females, No. 15447, U. S. Nat. Mus.; Washington, D. C., July 6, 1883; July 16, 1884 (Dept. Agr., Bur. Ent., No. 2367). No collector's label is attached, but apparently all were bred by Mr. A. Koebele.

***Sphida anoa*, new species.**

Dark reddish brown, the markings of fore wing obscured, essentially as in *oecogenes*. Basal space a little lighter, followed by a red shade; reniform elliptical, oblique, filled with dark red. Hind wing brown, the cell pinkish, with a dusky discal mark. Expanse, 50 mm.

Type, female, No. 15448, U. S. Nat. Mus.; Miami, Florida, 1901 (R. H. Hegen and H. C. Henricksen).

***Sphida gargantua*, new species.**

Body parts gray; center of thorax dark brown; abdominal tuft of female black. Fore wing with basal space violaceous gray, not white, yet contrasted, followed by a dark brown shade; reniform elliptical, oblique, reddish filled; orbicular a dot or absent; outer line crenulate, broken, faint; terminal space dark violaceous, contrasting, edged within by a darker irregular line. Expanse, 45–55 mm.

Cotypes, three females, No. 15449, U. S. Nat. Mus.; Los Angeles, California, May; larva in *Typha latifolia* (D. W. Coquillett).

***Sphida pleostigma* Dyar.**

This will be described in my forthcoming fourth Mexican paper to be published in the Proceedings of the United States National Museum. It is nearly allied to *gargantua* but apparently distinct.

THE LARVÆ OF XANTHOPASTIS TIMAIS CRAMER

(Lepidoptera, Noctuidæ)

By HARRISON G. DYAR

This widely spread and very constant species (as adult) has a number of different larvæ. So different are they that after describing one from Florida (Journ. N. Y. Ent. Soc., x, 125, 1902), I received others from Cuba, I could not believe they belonged to the same species, and published a correction (Journ. N. Y. Ent. Soc., xi, 104, 1903), repudiating the first identification. However, the larvæ were bred, and there is now no doubt of their identity. There was none then, either, in fact, but I could not believe it. How many forms this larva has I have no idea. Guenée's figure (colored),¹ from a drawing by Abbot, is utterly unlike any of the forms known to me. It has a black head, body whitish, with three straight black bands on each segment. If this was taken from the form occurring in Georgia, and that is like the Florida one, as it certainly ought to be, then the figure is a gross misrepresentation. Yet there are certain facts about this drawing that forbid us to discard it at once. Possibly the original figure by Abbot was uncolored, and Guenée's artist, in preparing the colored plate, failed to add the orange head and tail. The absence of the conspicuous tubercles in the drawing agrees with the Florida form. Curiously enough, the pattern of markings represents a sort of synthetic type. The Florida form has a dorsal and subventral spot on the anterior end of each segment, a band on posterior border; the Cuban form has four rows of spots, the posterior row of larger spots. Combining there we get, synthetically, a row of bands, much as in Guenée's figure. Admitting the possibility that such a larva may exist, I am rather inclined to the opinion that the artist has overdone the drawing in the matter of bands.

The Cuban form was described by Gundlach (Ent. Cubana, i, 304, 1886) and by me (Journ. N. Y. Ent. Soc., xi, 104, 1903). The same form occurs in Jamaica and was briefly noted by Mrs. Swainson (Journ. N. Y. Ent. Soc., ix, 81, 1901). I have a fine blown larva from Kingston from the Schaus collection. A condensed description of the Antillean larva is given by Hampson (Cat. Lep. Phal. Brit. Mus., v, 460, 1905). It differs conspicuously by the large black tubercles and the numerous small yellow spots, no bands. The differences are what are usually called

¹ Copied without color by Chenu, *Encycl. d'Hist. Nat.*, ii, 111, 1857.

structural, and would be thought to clearly indicate another species, if not another genus.

I have lately had the opportunity to observe the Mexican form in larvæ from Misantla, State of Vera Cruz, bred by Mr. W. Gugelmann. They resemble the Florida form quite closely, being rather more generalized. They are smooth, without prominent tubercles, head, cervical shield and anal segment as in the Florida form, but the segments with a row of spots on anterior border, the lower two spots on each side partly joined, but not joined subventrally to the broad band on posterior border. At the extremities the bands are broken into spots, on joints 2 to 5 and 11 to 13. This is only slightly indicated in the Florida form, where the anterior bands show an irregular outline. The difference is, then, an advance in the Florida form over the Mexican one in the loss of the subdorsal spot out of the anterior row and in the strengthening of the posterior band, widened and straightened and fused subventrally with the lower spot of the anterior row of the following segment. Thus the Mexican form agrees essentially with the Florida one, differing in characters which may, somewhat violently perhaps, be considered varietal and not specific. What becomes of the pattern in the rest of the vast range of the species cannot be conjectured. There is no local variation indicated in the material before me. The four Florida larvæ are alike, as are the two Mexican ones. The species ranges from Maine to Argentina, and if the larvæ have changed as much from Mexico to Florida as the specimens show, it is probable that other changes occur in the much greater distance covered by the range to the end of the continent of South America. However, I think that we are entitled to assume that there is not a radical difference, because the territory is continuous.

To return to the Antillean form, the conditions are different. It is to be supposed that the large tubercles are a primitive character. The spots were probably formed by the breaking up of longitudinal lines, which later form the transverse bands by lateral fusion. The Antillean larva, then, is in a generalized condition in both respects. It still has the large tubercles; its longitudinal lines are well broken into spots, which have become rounded, while the first step in forming the posterior band has been taken in the enlargement of those spots. But it has gone no farther, and there is a vast interval between it and the continental larva.

The conclusion seems irresistible that there are two species represented. I have examined series of adults carefully, but can see no difference in

markings. The male genitalia offer nothing tangible, being of a simple type, not strongly chitinized or differentiated. Nevertheless, on larval characters at least, the Antillean form should have a separate name. Of the names proposed, *timais* Cramer was described from the "côte du Coromandel;" *amaryllidis* Sepp, from Dutch Guiana, and *regnatrix* Grote from Pennsylvania. As there is thus no name for the Antillean form I propose **antillium**, n. sp.

This is a case of unusual distribution. Very many of the species found in southern Florida are of Antillean origin, but in this case it is clear that our *timais* is a continental species.

A NOTE ON THE MACROTHERCINÆ

(*Lepidoptera*, *Pyralidæ*)

By HARRISON G. DYAR

Doctors Barnes and McDunnough have recently (Cont. Nat. Hist. Lep. N. A., No. 5, p. 37, 1912) given an admirable treatment of the small group of genera allied to *Amestria* Ragonot. They show that *Amestria* falls before *Alpheias* Ragonot and my *Cacotherapia* before *Macrotheca* Ragonot. They add two new genera to the group. They give the following table to separate the genera, which I reproduce with the nomenclature of the veins changed.

Fore wing with 12 veins.

Fore wing with vein 10 arising beyond 7	<i>Alpheias</i> Ragonot
Fore wing with vein 10 arising before 7	<i>Macrotheca</i> Ragonot

Fore wing with 11 veins (8 and 9 coincident).

Fore wing with vein 10 stalked	<i>Alpheoides</i> B. & McD.
Fore wing with vein 10 from the cell	<i>Decaturia</i> B. & McD.

I had been aware for some time that my genus *Cacotherapia* belonged with *Amestria*, but had not worked out the matter as fully as has been done now. Unfortunately, the authors have quite misidentified my species *ponda*. It is a rather large, brownish moth with black irrorations and not the little gray and white one that they have figured. The true *ponda* falls in *Macrotheca* and not in *Alpheias*. The species which they misidentified as *ponda* may be characterized as

Alpheias vicarilis, new species.

Fore wing with the ground color nearly white, blotched with yellow-brown shades; basal space filled with brownish and dusted with black;

inner line angularly waved, black, slender, in a white space; median space with central brownish area, black dusting on costa and an upright black discal mark; outer line parallel to the outer margin, irregular, edged by whitish ground color; a blackish shade following, but not quite reaching margin; a terminal row of fused dots. Hind wing with very light fuscous shading. Expanse, 12-14 mm.

Cotypes, 6 specimens, No. 15521, U. S. Nat. Mus.; La Puerta Valley, California, July, 1911 (Wright & Field).

One of the cotypes is in the collection of Mr. G. H. Field and one in that of Mr. W. S. Wright.

Two other unnamed species of this group are before me.

***Alpheias querula*, new species.**

Brownish straw-color; fore wing with the lines black, slender, distinct, scarcely any black powdering on the wings; a line along costa; inner line a dark dash on costa and inner margin, preceded by a group of black scales and closely followed by the inner discal dot; outer discal dot similar; a few scattered irrorations; outer line oblique, nearly straight, preceded by irrorations toward costa; a broken row of terminal dots. Hind wing straw color. Expanse, 10-11 mm.

Cotypes, 3 specimens, No. 15522, U. S. Nat. Mus.; Brownsville, Texas, May and June, 1904 (H. S. Barber).

***Macrotheca unipuncta*, new species.**

Gray, finely powdered with darker; outer discal mark a large round black spot; inner obsolete; lines slender, black, but not so dark as the discal dot, wavy and converging somewhat toward inner margin; a terminal line of dark scales. Hind wing pale fuscous. Expanse, 13-15 mm.

Cotypes, 4 specimens, No. 15523, U. S. Nat. Mus.; Tryon, North Carolina, May and August, 1904 (W. F. Fiske); New Brighton, Pennsylvania, July 25, 1905 (H. D. Merrick).

Of the two new genera described by Doctors Barnes and McDunnough, *Alpheioides parvulalis* B. & McD. is before me in specimens recently received through the kindness of Mr. W. S. Wright. *Decaturia pectinalis* B. & McD. is, however, not in the National Museum, the authors having so far failed to avail themselves of their opportunities to benefit future students by depositing types in the National collection, although they described from a large number of specimens.

SOME EARLIER OBSERVATIONS ON THE HABITS OF *APHIOCHAETA JULI* (BRUES).

(*Diptera, Phoridae*)

By FREDERICK KNAB

In his recently published revision of the North American Phoridae Mr. J. R. Malloch has put on record observations on *Aphiochaeta juli*,¹ made by Mr. H. S. Barber, which establish beyond a doubt the parasitic habit of this species, suggested by the observations of Dr. S. Graenicher² and Mr. Nathan Banks.³ During the past summer Dr. J. A. Nelson, independently of Mr. Barber and without knowledge of his observations, also witnessed the oviposition of this species in a myriapod and succeeded in rearing specimens of the fly from the host. It is to be hoped that both of these gentlemen will publish their observations in detail. Dr. George Dimmock has recently informed me that at least two observations similar to those of Graenicher and Banks have been recorded and I point them out herewith so that they may be properly placed.

The first record is by J. A. Lintner, who had the observation from a friend.⁴ Not even the order to which the insects attacking the myriapod belonged is indicated, but from what Messrs. Banks, Barber and Nelson have told me of the behavior of *Aphiochaeta juli*, it seems reasonably certain that the "swarm of minute gnats making an lulus unhappy" were that species; at least we must so consider them until other species of Phoridae with identical habits are turned up. The note of Lintner called forth another from Dimmock, who also had observed minute Diptera swarming about a myriapod some years earlier.⁵ Not having the specimens available, he likened them to Drosophilidæ, which corresponds very well for size, and general appearance to the unaided eye, to *Aphiochaeta*. While the account is not so vivid, having been written some years after the observation was made, it seems referable here. The suggestion that the flies were attracted to the secretion of the myriapod was, of course, purely hypothetical.

¹ Proc. U. S. Nat. Mus., vol. 43, p. 459 (1912).

² Brues, C. T., Journ. N. Y. Ent. Soc., vol. 16, p. 201 (1908).

³ Proc. Ent. Soc. Wash., vol. 13, p. 212 (1911).

⁴ Canad. Ent., vol. 16, p. 80 (1884).

⁵ Canad. Ent., vol. 16, p. 100 (1884).

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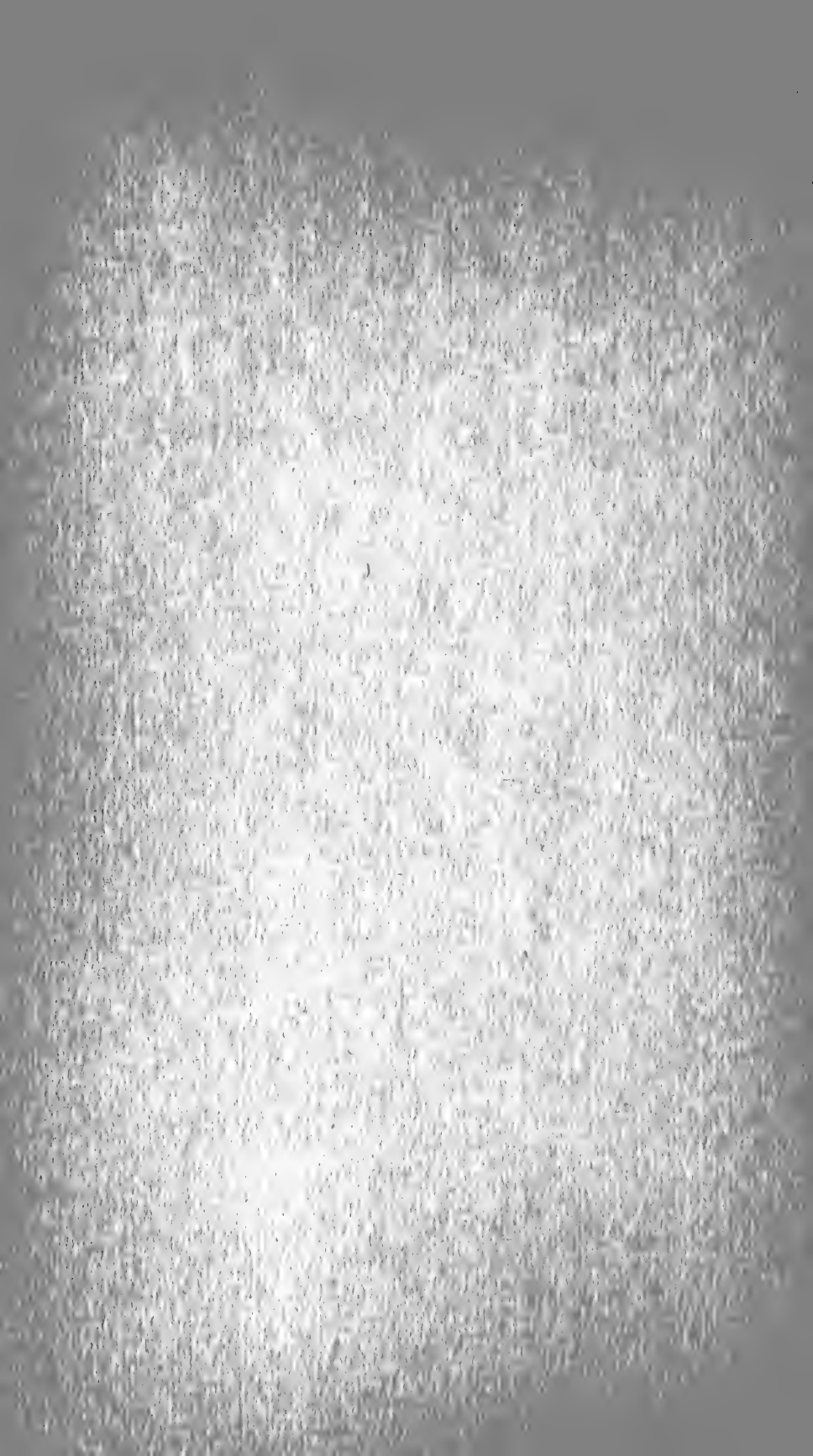
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TWO NEW NOCTUIDS FROM FRENCH GUIANA

(*Lepidoptera, Noctuidæ*)

By WILLIAM SCHAUS

Celiptera thericles, new species.

♀. Palpi brownish grey irrorated with white. Frons brown; vertex mottled pale bistre grey and brown; head behind dark brown. Collar dark brown mottled with bistre, edged with white behind. Body and wings pale bistre; thorax irrorated with white, the patagia crossed by a dark brown line; abdomen irrorated with white on basal segment otherwise with a few darker irrorations. Fore wings: a small dark brown spot on costa at base; a similar subbasal fascia to fold, divided by a fine white line; a fine white antemedial line, vertical, outbent below submedian, inwardly edged with dark brown, outwardly more broadly so edged, and cut by the pale veins; a black point as orbicular; reniform large, whitish, finely edged with pale brown, and containing a dark line; postmedial line pale olive brown, outcurved close to reniform, lunular beyond cell, incurved below reniform, outcurved above submedian, inangled on it, preceded by a fine parallel line from cell to inner margin, and followed by a narrow darker shade, and a white line beyond it from vein 3 to fold, outangled on vein 2; a fine whitish outer line, outbent and preceded by a rust streak on costa, deeply lunular to vein 6, thicker, reddish brown between 6 and 5, and followed by a black spot, below vein 6 straight to fold, and inangled on submedian, inwardly edged throughout by a fine brownish shade; a subterminal brown line from apex, close to outer line below vein 6, but straight to inner margin, followed by black points on veins; a dentate whitish grey marginal shade; a terminal yellow white line. Hind wings: a medial and two postmedial fuscous lines; a fine white outer line, inwardly edged with brown; terminal space fuscous grey; a darker subterminal line, followed by black

points; some marginal whitish shadings. Fore wings below: lower half shaded with fuscous grey; upper half brownish; a black spot on discocellular; a finely lunular postmedial line; a subterminal fuscous shade. Hind wings below yellowish white irrorated with brown; a dark discal point; traces of postmedial fine lines; a subterminal fuscous shade. Expanse, 42 mm.

Habitat: St. Jean, Maroni River, French Guiana.

Safia olearos, new species.

♂. Palpi black with a fine lateral white line. Head, collar, and thorax dark purplish brown. Abdomen above fuscous brown. Fore wings dark brown tinged with fuscous purple, except on termen; lines velvety black, fine; a faint outcurved subbasal line; antemedial line out-angled at vein 2; a medial line outcurved near end of cell, genimate below cell, the inner line touching the antemedial at vein 2 and on inner margin; reniform faintly dark outlined with a white point in front and one behind; postmedial deeply outcurved beyond cell; a subterminal faint darker shade, outwardly edged with lighter brown, forming distinct black spots between veins 6 and 8; a fine marginal wavy line. Hind wings brown; medial, and double postmedial darker lines, the postmedial minutely dentate; an outer velvety black line; a subterminal paler brown line, dark edged, but not distinct; a marginal wavy black line. Wings below dull dark brown, faintly tinged with olive; an outer, fine, dark line on hind wings. Expanse, 33 mm.

Habitat: St. Jean, Maroni River, French Guiana.

THE SPECIES OF AFRIDA MÖSCHLER

(*Lepidoptera, Lithosiidæ*)

By HARRISON G. DYAR

Möschler (Abh. Senck. Ges., xiv, 30, 1886) describes the genus in the Lithosiidæ; Hampson (Trans. Ent. Soc. Lond., 244, 1898) places it in the Nolinæ, later (Cat. Lep. Phal. Brit. Mus., ii, 348, 1900) in the Lithosiinæ. Möschler says vein 7 of hind wing arises from 8; Hampson says and figures vein 8 from middle of cell. In all my specimens, vein 8 has only a short anastomosis with 7, not over the basal fourth of the cell. I therefore think the genus very doubtfully placed in the Lithosiidæ; I should rather think it a noctuid. However, without any knowledge of the early stages, there is no special object in changing its position at this time.

Hampson records but four species. This is far too few, I feel certain. In the collection I found a number of different forms associated under the same names, but I see no reason to suppose these species possessed of unusual variability, and I have accordingly sorted them out on the usual lines. Where series are at hand, the markings seem as constant as in other genera.

TABLE OF SPECIES OF AFRIDA

Fore wing grayish white or greenish marked, with a broad mesial dark band, usually continuous, sometimes interrupted centrally, but traceable by its edges.

Antennæ of male pectinate.

Hind wing with tornus somewhat lobed and clothed with thick scales.

Tornus of hind wing with black scales . . . *torticiformis* Möschler

Tornus of hind wing with white scales . . . *torticifacies* Dyar

Hind wing of male not modified.

Central band with its inner edge wavy or indented.

Central dark band continuous across wing, at least by its inner border.

A dark shade on outer margin.

Fore wing heavily shaded with olive ochereous, the markings confused.

Spot before center of outer margin purple brown.

Larger; hind wing of male fuscous shaded . . . *parvula* Schaus

Smaller; hind wing nearly white.

basiposis Dyar

Spot before center of outer margin red.

interdicta Dyar

Fore wing lightly touched with olivaceous on the pale markings, the bands contrasted.

Larger; hind wing fuscous shaded . . . *minuta* Druce

Smaller; hind wing nearly white in the male.

charientisma Dyar

Fore wing not touched with olive; mesial band broadening to apex, not cut off by an oblique line . . . *pnixis* Dyar

No dark shade on outer margin.

Central band partly dark shaded; fore wing acute.

phasma Dyar

Central band with lines only; fore wing square.

sceletozona Schaus

Central dark band broadly broken in the middle . . . *gymnes* Dyar

Central band with its inner edge straight from costa to submedian.

Inner band pale, clear; marks sharply lined, contrasted.

cosmiogramma Dyar

Inner band sordid; marks diffused, edged by shaded lines.

ydatodes Dyar

Antennæ of male ciliated *ciliata* Hampson

Fore wing silvery white, without mesial band; a dark brown patch on outer margin.

Fore wing with dark central costal patch.

Costal patch triangular, roundedly pointed below . . . *melicerta* Druce

Costal patch quadrate or semicircular.

Costal patch quadrate or clouded, not rounded below.

Black markings on fore wing narrow, fine, dentate.

coagulata Dyar

Black markings few, coarse.

Costal patch clouded, illy defined below.

amphithrepta Dyar

Costal patch large, quadrate, touching the marginal

marking *melampages* Dyar

Costal patch rounded below.

Costal patch dark brown filled.

Larger, with angular broken lines in basal field.

zoephila Dyar

Smaller, with few or no markings in basal field.

melenita Dognin

Costal patch luteous with a dark edge.

Base white below costal patch; no subbasal line.

oligoglotta Dyar

Base luteous below costal spot, followed by a sub-basal line.

Outer line forming a dot at its subcostal outcurve

above angle of brown patch . . . *polyglotta* Schauss

Outer line not forming such a dot . . . *superciliosa* Dyar

Fore wing without central costal patch.

Basal field with only traces of markings or none . . . *claricosta* Dyar

Basal field with double broken and confused angular inner line . . . *zolda* Dyar

***Afrida tortriciformis* Möschler.**

Afrida tortriciformis, Möschler, Abh. Seuck. Ges., xiv, 30, 1886.

Described from Jamaica. I have no specimens of this form. The following is nearly allied.

***Afrida tortricifacies*, new species.**

Fore wing white, tinged with glaucous green, the lines broken and confused; mesial band broken; markings purplish black; an oblique inner line from costa half across wing; a rounded spot on costa opposite a tri-

angular one on inner margin with a tooth inward on vein 1; following are several angular broken lines, not appearing without a lens; purplish suffusion on margin preceded by a round red dot near middle. Hind wing whitish, with fuscous marginal band and discal dot. Expanse, 11 to 13 mm.

Cotypes, six specimens, No. 15429, U. S. Nat. Mus.; San Francisco Mountains, Santo Domingo, September, 1905 (A. Busck).

Afrida parvula Schaus.

Afrida parvula Schaus, Ann. Mag. Nat. Hist., (8), vii, 363, 1911.

A medium sized species, much suffused with olive ochereous, rendering the markings crowded and confused. I have only Mr. Schaus's two specimens from Costa Rica.

I have another species near this from Bahia, Brazil (A. Koebele), but the single female specimen is unfit to describe.

Afrida basiposis, new species.

Fore wing heavily shaded with olivaceous, the markings dense, crowded and confused; a broad, oblique, square black patch subbasally; central band dark, with irregular angled edges; dark suffusion on margin preceded by a purple-black spot above middle. Hind wing white, hardly tinged with fuscous; discal dot faint. Expanse, 10 mm.

Type, male, No. 15430, U. S. Nat. Mus.; San Francisco Mountains, Santo Domingo, September, 1905 (A. Busck). The single specimen is not in perfect condition.

Afrida interdicta, new species.

Fore wing sordid white, irrorate throughout with olive scales; costa at base black, with a broad half-band subbasally, slightly oblique; mesial band illy defined, broken into scattered irrorations, the bordering lines hardly distinct, strongest on costa; three costal spots beyond; termen with patches of dark scales among the olive ones; a round red spot centrally before the margin. Hind wing whitish, with dark discal dot and dusky terminal border. Expanse, 10 mm.

Type, male, No. 15431, U. S. Nat. Mus.; Baracoa, Cuba, August, 1902 (W. Schaus).

Afrida minuta Druce.

Nola minuta Druce, Biol. Cent.-Am., Lep. Het., i, 140, 1885.

Described from Costa Rica. I have seven specimens from there, three from Mexico and one from Texas (Brownsville, June 19, 1895, C. H.

T. Townsend). Druce's type, if really representing the species before me, is abnormal. None of my specimens have the mesial band constricted in the cell, though it varies somewhat in outline. The marginal purplish shadings, also, fill most of the terminal space, whereas there are only traces present in Druce's type. Moreover, the light areas are all marked with pale olive scales, of which no trace shows in the figures or descriptions of *minuta*. It may be found that there are several closely allied species here, but at present at least I will retain the name *minuta*.

Afrida charientisma, new species.

Fore wing white with faint olive tint; a patch at base of purplish brown, its edge dentate and distinct, base diluted; mesial band broad, brown, edged with black lines, dentate, constricted on submedian; a terminal dark patch with some brownish scales and a dark dot before it centrally. Hind wing whitish, with faint discal dot and terminal border. Expanse, 10 mm.

Cotypes, two males, four females, No. 15432, U. S. Nat. Mus.; Baracoa, Cuba, September, 1901 (A. Busck); Baracoa and Santiago, Cuba, June, August, September and October, 1902 (W. Schaus).

Afrida pnixis Dyar.

This will be described in a forthcoming report dealing with the results of the Smithsonian Biological Survey of the Panama Canal Zone. The present diagnosis in the table may hold the name. The single male type is in rather poor condition.

I have before me a specimen allied to this form from French Guiana (60 miles up the Maroni River, W. Schaus), but the single female is unfit to describe.

Afrida phasma, new species.

Fore wing white, a little creamy in tone; basal patch and mesial band defined by their edges, the outer edge of mesial band breaking down, incompletely filled, the basal space dark on costal half, the mesial band only on the inner third of upper half, where a dark central line approaches the inner border, the rest of the band vaguely brownish. Two dark specks on costa at apex; a point on middle of outer margin and a few dark scales in the fringe. Hind wing whitish, nearly immaculate. Expanse, 15 mm.

Type, male, No. 15439, U. S. Nat. Mus., Castro, Parana, Brazil (Schaus collection).

Afrida sceletozona Schaus.

This will be described by Mr. Schaus in one of his Costa Rican papers, appearing in the Annals and Magazine of Natural History. The

species is in some respects near the original of *minuta* Druce, though quite distinct from the accepted determination of that species.

***Afrida gymnes* Dyar.**

This will be described in the report of the Smithsonian Biological Survey of Panama, together with *pnixis*. The ordinary band is interrupted through the middle, giving quite a characteristic appearance to the little moth. I have a small series of cotypes.

***Afrida cosmiogramma*, new species.**

Fore wing white; basal space brownish, limited by a dark half-line from costa; mesial band broad, brownish filled, black edged, the edge lines straight, the inner angled on submedian, the outer at vein 4, curved below; inner half of median band more strongly dark-filled than outer, intensified on submedian fold; a dark diffused shade on margin, touching projection of median band. Hind wing whitish, with gray discal point and terminal border. Expanse, 10 mm.

Type, male, No. 15433, U. S. Nat. Mus.; Baracoa, Cuba, September, 1902 (W. Schaus).

✓ ***Afrida ydatodes*, new species.**

Essentially as in the preceding, but diffused and irrorated; the white areas are pale gray from the dark irrorations, the central band is clouded, dark, its edges not forming strong lines, but only a little darker. Hind wing whitish, with gray discal point and terminal border. Expanse, 10 mm.

Type, female, No. 15434, U. S. Nat. Mus.; Florida (Beutenmüller collection).

***Afrida ciliata* Hampson.**

Afrida ciliata Hampson, Cat. Lep. Phal. Brit. Mus., ii, 350, 1900.

Apparently close to *A. sceletozona* Schaus, but easily told from all the other species by the non-pectinate antennæ of the male. I have no specimens of this form.

***Afrida melicerta* Druce.**

Nola melicerta Druce, Biol. Cent.-Am., Lep. Het., i, 140, 1885.

The largest species in the genus and very distinctly marked. I have it only from Costa Rica. Hampson's other localities, Mexico, Brazil and Bolivia, refer to other species (Cat. Lep. Phal. Brit. Mus., ii, 350, 1900).

Afrida coagulata Dyar.

This will be described in my fourth paper on Mexican Lepidoptera, to appear in the Proceedings of the United States National Museum.

Afrida amphithrepta, new species.

Fore wing silvery white; a broad purple shade on two-thirds of costa, cut by a white bar beyond base, the segments black edged; a small black arc on costa before apex; a broad purple shade on outer margin, projecting centrally to below cell; a black dot above it and one below above inner margin; base a little yellowish; a crooked looped line rising from inner margin to cell at basal third. Hind wing whitish, with broad gray border and discal dot. Expanse, 15 mm.

Type, female, No. 15435, U. S. Nat. Mus.; Metan, Province of Salta Argentina, February, 1905 (E. Dinelli).

Afrida melampages, new species.

Fore wing white, marked with purple-black, the markings large and coarse; a spot at base of costa; a large quadrate central patch, touching the patch on the margin; a small arc before apex; patch on outer margin irregularly edged, projecting inward to middle of costal patch; a thick looped line rising from inner margin at basal third; a dot at outer third. Hind wing smoky gray. Expanse, 16 mm.

Type, female, No. 15436, U. S. Nat. Mus.; São Paulo, Brazil (Schaus collection).

This is also the type of *melicerta* Ab. 2 Hampson (Cat. Lep. Phal. Brit. Mus., ii, 350, 1900).

Afrida zoephila Dyar.

To be described in my fourth Mexican paper.

Afrida melenita Dognin.

Afrida melenita Dognin, Het. Nouv. l'Am. du Sud, ii, 13, 1911.

Described from French Guiana, whence I have a series of six, taken by Mr. Schaus.

Afrida oligoglotta, new species.

Fore wing silvery white; costa with triangular purple-brown patch at base, small semicircular luteous spot at middle, edged with black, indistinctly so below, and a small black arc before apex; outer margin with

large purple patch, covering tornus and extending inward below end of cell, its upper edge indented by three black marks, two of them longitudinal, the center one upright; a black cusp on middle of inner margin; a dot at outer third. Expanse, 14 to 15 mm.

Cotypes, two males, three females, No. 15437, U. S. Nat. Mus.; Castro, Parana, Brazil (Schaus collection).

Afrida polyglotta Schaus.

To be described by Mr. Schaus in one of his Costa Rican papers. Close to *A. superciliosa*, the markings still more developed.

Afrida superciliosa, new species.

Allied to *A. oligoglotta*, with the markings more numerous; at the inner edge of the purple patch a slender black line runs upward, which, with the erect dash, partly encloses the inner horizontal line, which is rounded, forming an imperfect ocellus; a small dot below the costal patch; a dentate looped line on basal third of inner margin, with an upward branch, nearly enclosing an orange patch at base of wing. Expanse, 15 mm.

Type, female, No. 15438, U. S. Nat. Mus.; São Paulo, Brazil (Schaus collection).

This is *melicerta* Ab. 1 Hampson (Cat. Lep. Phal. Brit. Mus., ii, 350, 1900).

Afrida claricosta, new species.

Fore wing silvery white; three small broken black dashes on costa and an arc before apex; purple patch on outer margin indented above, with three black marks, outer arcuate, center upright, inner longitudinal; basal field clear of markings. Hind wing cinereous tinged, margin and discal dot darker. Expanse, 10 to 12 mm.

Cotypes, four males, No. 15440, U. S. Nat. Mus.; St. Jean, Maroni River, French Guiana, March and April, 1904 (W. Schaus); 60 miles up Maroni River, French Guiana, August, 1904 (W. Schaus).

Afrida zolda Dyar.

This will be described in my fourth Mexican paper. Besides the Mexican type, I have another specimen from Costa Rica which agrees in markings, but is much smaller. I have not ventured to separate it at present.

FIVE NEW NORTH AMERICAN PYRALIDÆ

By HARRISON G. DYAR

Pyralis cacamica, new species.

Brownish straw-color, dusted with black; the dusting heavy over inner third of wing; inner line obsolete, faintly shown below, strongly dentate; outer line black, diffused, excurved and finely crenulate mesially, followed by a broad clear space; a black line along costa centrally, cut by four little pale dots; a row of terminal black spots. Hind wing pale stramineous with terminal dots. Expanse, 24 mm.

Cotypes, three specimens, No. 15525, U. S. Nat. Mus.; San Diego, California, July, 1911 (G. H. Field).

One of the cotypes is in the collection of Mr. Field.

Ambesa monodon, new species.

Close to *A. mirabella* Dyar, but the abdomen and hind wings whitish, without any yellow tint; fore wing with the markings more contrasted, cell and costa distinctly white, the excursion of the inner line forming one long blunt tooth, not a double point. Allied also to *A. walsinghami* Ragonot, but the tooth of inner line much longer. Expanse, 18 mm.

Type, female, No. 15526, U. S. Nat. Mus.; Stockton, Utah, July 1, 1907 (T. Spalding).

Tacoma submedianella, new species.

Similar to *T. feriella* Hulst, but rather smaller, of a more whitish tone, due to the denser white irrorations; instead of the quadrate white patch, a long white streak along submedian from base to above tornus, widened irregularly just beyond inner line. Expanse, 15 mm.

Cotypes, three females, No. 15524, U. S. Nat. Mus.; La Puerta, California, July, 1911 (Wright & Field).

One of the cotypes is in the collection of Mr. W. S. Wright. Without seeing a male, the generic position is uncertain.

Yosemitia maculicula, new species.

Dark gray; fore wing with scattered black scales, without any of the usual markings; the dark scales lie mostly along the veins, especially in a dash along center of median vein, at the origin of veins 3-5 and the veins toward apex of costa, not forming continuous lines. Hind wing whitish, tinged with gray on costa. Expanse, 23 mm.

Cotypes, three specimens, No. 15527, U. S. Nat. Mus.; La Puerta Valley, California, July, 1911, and San Diego, California, June 26, 1911 (G. H. Field).

One cotype is in the collection of Mr. Field.

Zophodia fieldiella,[✓] new species.

Brownish gray, costa washed with white; lines nearly obsolete, inner near the base, but with a long tooth reaching to discal dot, the upper streak of the tooth fairly distinct; outer line near the margin, blackish, waved, followed by whitish but indistinct; apex radially lined with black on the veins; discal dot a small black and white speck. Hind wing cinereous tinged. Expanse, 19-23 mm.

Cotypes, eight specimens, No. 15528, U. S. Nat. Mus.; La Puerta Valley, California, July, 1911 (G. H. Field); Catalina Springs, Arizona, May 8, 1898 (E. A. Schwarz).

Three of the cotypes are in the collection of Mr. Field.

A NEW BROMELICOLOUS MEGARHINUS

(*Diptera*; *Culicidae*)

By FREDERICK KNAB

Megarhinus iris, new species.

Female: Palpi over three-fourths the length of the proboscis; terminal segment minute, the penultimate upturned, subtruncate, with a number of stout, projecting terminal bristles; vestiture of metallic violet and mauve scales, golden beneath and above at base and constriction of longest joint. Occiput clothed with flat iridescent blue, green and purplish scales; cheeks silvery white scaled.

Prothoracic lobes bright metallic blue. Mesonotum clothed with small dark olivaceous brown scales with blue, green and purple reflections, a patch of brilliant blue scales over the roots of the wings; bristles over the roots of the wings black. Scutellum bright metallic blue scaled.

Abdomen dorsally metallic violet-blue, basally brighter and with greenish reflections, the apices of the segments with crimson luster; segments with large, lateral, basal, rounded yellowish-silvery spots, visible from above; small yellowish white lateral tufts at apical angles of sixth segment, large dull black lateral tufts involving apical half of seventh segment and all of the sides of the eighth segment; apical bristles of ninth segment pale; venter yellowish-silvery with median dark line.

Wings small, narrow, with typical venation.

Legs dark violet-blue scaled, the femora silvery yellowish-white scaled beneath nearly to apices; tibiæ and tarsi unmarked. Claws simple.

Trinidad, West Indies (F. W. Urich).

Type: Cat. No. 15603, U. S. Nat. Mus.

Described from a single female reared by Professor Urich from a larva found in water held by an epiphytic bromeliad. The body of the larva showed iridescent colors.

Evidently closely related to *Megarhinus violaceus* Wiedemann, described from the State of Bahia, Brazil, but does not agree with the description of that species in several details. In that species the lateral tufts of the sixth segment are said to be golden and there is no mention of the abdominal lateral silvery spots, so conspicuous in the specimen before me.

It must be pointed out that *Megarhinus mariæ* is in all probability a synonym of *M. violaceus* Wiedemann. The former is known only from the female, the latter only from the male. Both are from the same locality, Bahia, and agree in general coloration, as well as in the presence of bi-colored caudal tufts and the absence of tarsal markings. My information in the case of *violaceus* rests upon an examination of the type by Dr. L. O. Howard. The species called *Ankylorhynchus violaceus* by Lutz, Theobald and Peryassú is not identical with Wiedemann's species, nor is the *Megarhinus purpureus* of Theobald which has been placed as a synonym of it. This last, however, agrees with the *violaceus* of Lutz, and that species will therefore have to be known as *Ankylorhynchus purpureus*. The synonymy therefore stands as follows:

***Megarhinus violaceus* (Wiedemann).**

Culex violaceus Wiedemann, Aussereurop. zweifluegl. Ins., i, 3, 1828.

Megarhina (?) *violacea* Giles, Handb. Gnats or Mosq., 132, 1900.

Megarhina (?) *violacea* Giles, Handb. Gnats or Mosq., 2 edit., 278, 1902.

Megarhinus mariæ Bourroul, Mosq. do Brasil, 3, 1904.

Megarhinus mariæ Theobald, Mon. Culic., iv, 129, 1907.

***Ankylorhynchus purpureus* (Theobald).**

Megarhinus purpureus Theobald, Mon. Culic., i, 230, 1901.

Megarhinus violaceus Theobald (not Wiedemann), Mon. Culic., iii, 117, 1903.

Ankylorhynchus violaceus Lutz (not Wiedemann) in Bourroul, Mosq. do Brasil, 65, 1904.

Ankylorhynchus violaceus Theobald (not Wiedemann), Mon. Culic., iv, 127, 1907.

Ankylorhynchus violaceus Peryassú (not Wiedemann), Culic. do Brasil, 149, 1908.

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ХИМ. ЛАБОРАТОРИЯ

Insecutor Inscitiae Menstruus

Vol. I

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No. 4

THE AMERICAN SPECIES OF DYSODIA

(*Lepidoptera*, *Thyrididae*)

By HARRISON G. DYAR

In reviewing the genus *Dysodia* Clemens in 1897, Sir George F. Hampson recognized but three species as American (Proc. Zool. Soc. Lond., p. 609). Some others have been since described, but a number of apparently undescribed forms remain before me. The species may be separated by the following table:

Fore wing with white-hyaline discal spot.

Subterminal band of fore wing broad or shaded; hind wing below with round pale mottlings on a dark ground.

Ground color yellow; hind wing below with few large pale mottlings.

oculatana Clemens

Ground color rosy brown, on fore wing entirely covered by black-brown except for reticulated submarginal band

vitrina Boisduval

Ground color coppery orange; hind wing below with many small pale mottlings.

Subterminal band present, especially on fore wing beneath; pale mottlings on hind wing below in lines, rather sparse

summargo Dyar

Subterminal band absent on fore wing below; pale mottlings of hind wing below very numerous and dense.

Wings below lilac brown *immargo* Dyar

Wings below light straw color *granulata* Neumogen

Subterminal band of fore wing narrow, linear.

Yellow, overlaid with gray; white discal spot of fore wing before the outer band *monava* Dyar

Orange, coarsely irrorate; white discal spot enclosed by the outer band.

igualensis Dyar

Fore wing without a white-hyaline discal spot.

Discal spot of hind wing, if present, whitish, subhyaline.

Median (outer) band of fore wing broad, with a definite oblique outer edge.

Median (outer) band very widely furcate; hyaline spot of hind wing with a long line running toward base from lower angle.

dixozona Dyar

Median (outer) band moderately furcate or only widened toward costa; discal spot of hind wing without basal prolongation.

Fore wing with continuous submarginal band parallel to margin *nipsa* Druce

Fore wing with submarginal band broken into an oblique piece across apex and one above tornus.

Tornal section of submarginal band forming a broad spot.

Costal section of submarginal band running to apex on outer margin . . . *thyridina* Felder & Rogenhofer

Costal section of submarginal band running to costa before apex *angulisola* Dyar

Tornal section of submarginal band linear or absent.

Mesial band of hind wing furcate, a slender branch running to tornus.

Discal spot of hind wing large, single.

Median (outer) band of fore wing tapering to a line on inner margin.

speculifera Sepp

This band broad; all lines broadened.

Discal spot of hind wing large, full.

Suffused with dark olive-fuscous . . . *olivescens* Warren

Suffused with fiery red.

pyrsocoma Dyar

Discal spot of hind wing small,

constricted . . . *confusata* Warren

Discal spot of hind wing double.

Base of the costa of the ground color to outer line.

Apex clouded by a purple-fuscous shade to vein 6 . . . *derufata* Warren

Apex unclouded, the submarginal ground color reaching costa.

innubila Warren

Costa broadly dark shaded from base to outer line . . . *flagrata* Walker

Mesial band of hind wing not furcate, the reticulations parallel.

Median (outer) band convex on outer side.

nomima Dyar

Median (outer) band straight or concave.

Discal spot of hind wing large . *lineata* Druce

Discal spot of hind wing minute . *borro* Dyar

Median (outer) band of fore wing linear from a costal spot or irregular and confused.

Ground yellow; a straight line across apex from costa to outer margin *sica* Druce

Ground color orange to brown; no line across apex.

Outer line linear, straight, arising from a costal patch.

Hind wing with a large white-hyaline discal mark with yellow spots before it *traumatias* Dyar

Hind wing with discal mark minute or absent.

Hind wing with a straight distinct mesial line.

remie Dyar

Hind wing with markings confused and mottled.

lusia Druce

Outer line blotched, irregular or confused.

Coppery orange; hind wing with coarse rounded reticulations with fine ones within . . . *ingenicula* Dyar

Heavily brown shaded; reticulations obscured, mostly a few longitudinal lines left . . . *spissicornis* Warren

Discal spot of hind wing yellow-hyaline; margin of hind wing clear bronzy yellow *callista* Dyar

Dysodia oculatana Clemens.

Dysodia oculatana Clemens, Proc. Acad. Nat. Sci. Phila., 349, 1860.

• *Varnia plena* Walker, Cat. Brit. Mus., Lep. Het., xxxiii, 826, 1865.

• *Platythyris fasciata* Grote & Robinson, Ann. Lyc. Nat. Hist. N. Y., viii, pl. 13, f. 4, 1867.

Thyris montana H. Edwards, Proc. Cal. Acad. Sci., v, 413, 1874.

Varnia aurea Pagenstecher, Iris, v, 32, 1892.

This species is widespread through the United States, Mexico, and Central America, reaching Venezuela. It is generally scarce and local in occurrence. The larva lives in folded leaves on *Eupatorium*.

Dysodia vitrina Boisduval.

Thyris vitrina Boisduval, Mon. Zyg., 19, 1829.

This species is unknown. Boisduval's figure may have been copied from one by Abbot. He states that he received a drawing of the larva from Georgia, while the description reads as if made from the figure. It seems scarcely possible that the figure could have been made from a specimen of *oculatana*, though the size and shape of the discal spots are much the same. The ground color is shown as violet red, the fore wings entirely dark except for a submarginal band of the ground color, cut by

reticulations. Researches should be made in Georgia to see if this form really exists there. Boisduval says that the larva is rather common in the interior of the branches of *Phaseolus*.¹

Dysodia summargo, new species.

Ground color suffused with coppery brown, shining yellowish toward bases of wings and costa; reticulations dense, purple-brown, tending to circles with central dots; bands broad, even, subparallel, with dentate edges, the basal two a little curved, the outer and submarginal nearly straight; margin of wings well scalloped; fore wing with narrow oblique white-hyaline discal spot. Hind wing with large constricted spot; costa and tornus dark shaded; reticulations distinctly circular. Expanse, 25–30 mm.

Cotypes, 13 specimens, No. 15531, U. S. Nat. Mus.; Jalapa, Mexico (Schaus collection); Cordoba, Mexico, May, 1906 (W. Schaus); Orizaba, Mexico, March, 1908 (R. Müller).

Dysodia immargo, new species.

Ground color coppery brown; pale yellow very narrowly on costa; reticulations very fine and dense, the pale intervals tending to be punctiform; bands broad, similar, but little relieved, the submarginal shading to the margin; discal spot of fore wing small, of hind wing constricted, white-hyaline. Hind wing nearly uniformly purplish reticulate, with punctiform intervals of ground color. Expanse, 21 mm.

Type, No. 15532, U. S. Nat. Mus.; Cordoba, Mexico, May, 1906 (W. Schaus).

Dysodia granulata Neumoegen.

Platythyris granulata Neumoegen, Papilio, iii, 137, 1883.

Described from Arizona. The species is not before me, but seems well characterized by Neumoegen.

Dysodia monava Dyar.

Dysodia monava Dyar, Proc. U. S. Nat. Mus., xlv, 317, 1913.

This species has the ground color yellow, the margins broadly dark shaded; the submarginal line is very narrow. Only the type from Mexico is before me.

¹ Possibly this is an earlier name for *Thyris maculata* Harris. The habit of the larva as an internal feeder in stems would suggest *Thyris*. The larvæ of *Dysodia* live in rolled leaves. But I cannot reconcile Boisduval's figure with *maculata*.

Dysodia igualensis, new species.

Orange-yellow, the body parts of the same light color as the wings; markings strigose rather than reticulate, fine, open; inner and submarginal lines fine, slender, irregular; a bar across center of cell; outer line widening to costa and enclosing the small white-hyaline discal dot. Hind wing with numerous transverse strigose lines; discal spot large, heart-shaped. Expanse, 19 mm.

Type, No. 15533, U. S. Nat. Mus.; Iguala, Guerrero, Mexico, June, 1906 (W. Schaus).

Dysodia dioxzona, new species.

Body parts dark gray-brown. Fore wing yellowish, blotched with fiery red; basal space fiery red, marked with brown on costa and inner margin and followed by the inner band, which stops at subcosta; reticulations fine, dense, strigose; outer band oblique, broad, joined by two bands from costa, first from before middle of costa, second close to end of outer band and forming an expansion of it. Hind wing with broad band near base; discal mark white-hyaline, narrow, constricted, sending a spur toward base below; outer band broad, running obliquely to tornus. Expanse, 22-24 mm.

Cotypes, two specimens, No. 15534, U. S. Nat. Mus.; Jalapa, Mexico (Schaus collection); Mexico City, Mexico, June, 1909 (R. Müller).

Dysodia nipsa Druce.

Dysodia nipsa Druce, Biol. Cent.-Am., Lep. Het., i, 325, 1889.

This is not before me. The characters are taken from Druce's figure.

Dysodia angulisola, new species.

Ground color yellow, shaded with coppery red; fore wing with broad purple-brown bands, the inner one broadened on costa, the space within it nearly filled by the dark markings; submarginal band represented by a detached piece below apex and one above tornus; a purplish shade runs along costa broadly, darkening the clear space of termen. Hind wing dark on costa and within a band near base; discal spot divided, angular; disk of wing finely reticulated, appearing broadly light and not crossed by any heavy lines. Expanse, 26 mm.

Type, No. 15535, U. S. Nat. Mus.; Cabima, Panama, May, 1911 (A. Busck).

I have associated with this three specimens, in general similar. One, La Florida, Costa Rica, March, 1907 (W. Schaus), has the hind wing darker, the disk closely reticulated and not appearing conspicuously lighter. The second, Cordoba, Mexico, May, 1910 (L. O. Howard), has the hind wing still darker, the reticulations forming a solid shade with punctiform spaces, the pale ray from discal spot to inner margin narrow and contrasted. The third specimen is from Peru (Schaus collection) and is large, the hind wing especially strongly shaded with coppery red, the costa not contrastingly dark; discal spots rather large.

Dysodia thyridina Felder & Rogenhofer.

Dysodia thyridina Felder & Rogenhofer, Reise Novara, Lep., pl. 117, f. 20, 1873.

Dysodia thyridina Warren, Nov. Zool., xv, 334, 1908.

Described from French Guiana. The figure is very similar to *D. angulisola*, described above, and may be the same, but the apical dark mark is shown attached to the margin, which does not occur in *angulisola*. Hampson referred this as a synonym of *speculifera*, but I cannot so consider it. Warren also separates it, but I cannot decide from his remarks whether this is the same as *angulisola* or not.

Dysodia speculifera Sepp.

Phalaena speculifera Sepp, Surin. Vlind., iii, pl. 135, 1830.

Varnia aequalis Walker, Cat. Brit. Mus., Lep. Het., xxxiii, 825, 1865.

Specimens are before me from French Guiana and Venezuela. Walker's *aequalis* was described from the United States, presumably Florida. I have seen no specimens from our territory. Sepp figures the larva in a rolled, partly cut off leaf, but he does not mention the name of the food plant. He says: "Cette retraite est composée d'une feuille liée étroitement et dont le bout est découpé à demi pour former une ouverture, servant d'issue aux excréments. Elle quitte cette demeure pour chercher sa nourriture, et après avoir satisfait ce besoin elle s'y retire pour se reposer."

Dysodia pyrsocoma, new species.

A development of *speculifera* with the bands broadened, the wings narrowed and suffused with fiery red. It is probably a form of *confusata* Warren, near to *olivescens* Warren, but bright red instead of brown. I list it as a species, as I have not seen Warren's two forms and may possibly have misinterpreted the descriptions.

Type, No. 15626, U. S. Nat. Mus.; Tuis, Costa Rica, June (W. Schaus).

Dysodia confusata Warren.

Dysodia confusata Warren, Nov. Zool., xv, 332, 1908.

Dysodia confusata olivescens Warren, Nov. Zool., xv, 332, 1908.

Described from Ecuador. From the description it seems close to *pyrsocoma*, and it is perhaps the stem form from which it arose. I place *olivescens* as a variety, following Warren. I have not seen specimens.

Dysodia innubila Warren.

Dysodia innubila Warren, Nov. Zool., xv, 334, 1908.

Described from Bolivia and Peru. I have not seen specimens, but place it from Warren's description, characterized by the absence of the apical clouding.

Dysodia derufata Warren.

Dysodia derufata Warren, Nov. Zool., xv, 333, 1908.

This differs from *speculifera* by the divided discal spot of hind wing. I have specimens from Castro, Parana, Rio Janeiro, and Joinville, Brazil.

Dysodia flagrata Walker.

Farnia flagrata Walker, Cat. Brit. Mus., Lep. Het., xxxiii, 826, 1865.

Platythyris floridana Hulst, Ent. Amer., ii, 182, 1886.

Dysodia flagrata Warren, Nov. Zool., xv, 333, 1905.

I placed *floridana* as a synonym of *speculifera* (Bull. 52, U. S. Nat. Mus., 361, No. 4136, 1903) but according to Hulst's description it differs in the divided discal spot of hind wing and the fore wing being shaded broadly along costa with dark color from base to outer line. I possess no material of this form, but Warren's notes on *flagrata* appear to make *floridana* identical with it.

Dysodia nomima, new species.

Dull orange, with little red tint, finely reticulate; outer line broad, evenly widened to costa, its outer edge smoothly convex; a fine line running up from tornus and one across apex. Hind wing evenly reticulate, without contrasted lines except the broad mesial band, widest on costa; one minute white discal dot. Expanse, 22 mm.

Type, No. 15536, U. S. Nat. Mus.; Rinconada, Vera Cruz, Mexico (Schaus collection).

Dysodia lineata Druce.

Dysodia lineata Druce, Biol. Cent.-Am., Lep. Het., i, 325, 1889.

This form is not before me. It has been placed by Druce's figure.

Dysodia borro, new species.

Entirely suffused with purplish fuscous, the center of the wing coppery brown; lines and reticulations dark, not contrasted; subbasal and inner lines curved, the latter with a projection at middle; outer line broader, widened on costa; a slender line across apex. Hind wing with broad mesial band preceded by two minute white-hyaline discal dots. Expanse, 24 mm.

Type, No. 15537, U. S. Nat. Mus.; Jalapa, Mexico (Schaus collection).

Dysodia sica Druce.

Dysodia sica Druce, Biol. Cent.-Am., Lep. Het., i, 325, 1889.

Placed from the figure only.

Dysodia traumatias, new species.

Tan color, washed with purplish faintly, a light red patch beyond cell on fore wing; reticulations fine, dotted; lines lost or reduced to dots, only a dark triangle remaining on costa of the outer line. Hind wing with discal mark large, deeply incised, followed toward inner margin by a yellow patch, cut by red reticulations. Expanse, 23 mm.

Type, No. 15538, U. S. Nat. Mus.; Jalapa, Mexico (Schaus collection).

Dysodia remie, new species.

Light reddish, as in *speculifera*, but the margins of both wings a little darkened; reticulations strigose; subbasal and inner lines slender, the outer slender, straight, arising from a triangular blotch on costa. Hind wing with straight slender mesial line, preceded by small white-hyaline discal dots. Expanse, 23 mm.

Type, No. 15539, U. S. Nat. Mus.; La Chorrera, Panama, May, 1912 (A. Busck).

Dysodia lusia Druce.

Dysodia lusia Druce, Biol. Cent.-Am., Lep. Het., i, 325, 1889.

Described from Panama. A specimen is before me from Costa Rica,

taken by Mr. Schaus and identified by him. It is a plain, dark species without hyaline discal dots.

Dysodia ingenicula, new species.

A large coppery red species, with coarse reticulations enclosing the small ones; costa and apex of fore wing shaded with a faint dark color, destroying the coppery tint; lines forming part of the coarse reticulations, the outer broad above and with a projection on each side; a similar band on hind wing; discal dot single, minute. Expanse, 32 mm.

Type, No. 15540, U. S. Nat. Mus.; Aroa, Venezuela (Schaus collection).

Dysodia spissicornis Warren.

Dysodia spissicornis Warren, Nov. Zool., xv, 334, 1908.

A specimen from Petropolis, Brazil (Schaus collection) is before me, smaller than Warren's measurement, but agreeing otherwise with his description.

Dysodia callista, new species.

Body yellowish ocher; collar suffused with purplish red; abdomen with a purple band. Fore wing light ocher, yellow at the tornus; apex broadly purple, the patch reaching to center of costa and angle of outer margin, containing three pale costal dots; before it a band from costa to submedian; below it two oblique darker bands to inner margin. Hind wing with central angle; base ocher, termen yellow; mesial band purple, broad, furcate on inner margin; discal mark large, quadrate, incised, yellow-hyaline. Expanse, 27 mm.

Type, No. 15541, U. S. Nat. Mus.; Suapure, Venezuela, April, 1900 (E. A. Klages).

SPECIES OCCURRING IN THE UNITED STATES

According to the records we should have five species in the United States. Of these only one, *oculatana* Clem., is well known; *vitrina* Boisd. is an unrecognized description; *granulata* Neum. is a local species in the Arizona mountains; *speculifera* Sepp and *flagrata* Walk. are tropical strays into southern Florida. Mexico is undoubtedly the stronghold of *Dysodia*, over one-third of the species being recorded from there.

A NEW GENUS AND TWO NEW SPECIES OF CHLOROPIDÆ (DIPTERA)

By J. R. MALLOCH

Eugaurax, new genus.

Separable from *Gaurax* by the much shorter haired, pubescent arista ; the possession of two notopleural and four supraalar bristles, and a transverse row of strong, black, prescutellar bristles, 8-10 in number, on the mesonotum, as well as a series of about 8 strong marginal scutellar bristles. The scutellum is flattened and the posterior margin rounded in outline, with about 8 strong marginal bristles, the middle pair of which are strongest. In other respects, ventation, etc., similar to *Gaurax*. From *Botanobia*, *Eugaurax* may be distinguished by the chaetotaxy of the mesonotum.

Type of genus *Eugaurax floridensis*, new species.

Eugaurax floridensis, new species.

Female: Head yellow, opaque; frons slightly over one-third the width of head at vertex, slightly wider anteriorly, entirely yellow except for the ocellar region, which is black; ocellar triangle distinct, almost as wide as frons at vertex, and reaching midway to anterior margin; entire surface of frons, except triangle, with short, scattered black hairs; post-vertical bristles cruciate, outer vertical bristle strong, inner pair hair-like; eyes pubescent; antennæ yellow, of moderate size, third joint rounded, browned on upper surface; arista yellow, apical half brown, shortly pubescent, the base with an elongate thickening; face and cheeks whitish yellow, the former with a slight keel; height of cheeks less than one-fourth that of eye; eye one and one-half times as high as broad; proboscis and palpi pale yellow, the latter of good size, bare. Mesonotum yellow, subshining; disk with a broad, posteriorly quadridentate brown mark, the center portion of which, on the anterior margin, and the tips of the outer posterior prolongations are black; there is also an indication of a black mark on the rounded portion behind the humerus on each side, and anterior to the suture; the center two teeth of the discal marks are considerably shorter than the outer two; disk covered with short, pale hairs, the bristles throughout black; pleuræ glossy yellow; scutellum yellow, disk with very fine, pale, scattered hairs; postnotum glossy black. Abdomen yellow, with a black spot on the center of each segment forming a dorso-central line, and a triangular spot on anterior margin of each segment laterally, which gives indications of coalescing with the central spots, forming a series of tridentate transverse fasciæ.

Legs yellow, normal, no bristles present, the surfaces with short, pale hairs. Wings clear; veins yellow; auxiliary vein indistinct; first costal division over two-thirds as long as second, second slightly over twice as long as third; outer portions of third and fourth veins subparallel, only divergent at extreme apices; outer cross vein oblique; last section of fifth vein distinctly longer than penultimate section of fourth. Halteres pale yellow.

Length, 1-1.75 mm.

Type: Cat. No. 15653, U. S. Nat. Mus.

Type locality: Biscayne Bay, Florida (Mrs. A. T. Slosson).

Paratypes: Male and female, Atlantic Beach, Florida (Mrs. A. T. Slosson); one female, Riverton, New Jersey (no collector's name).

The male is similar in most respects to the female, but the frons is parallel-sided, the surface hairs on frons are pale, and the third antennal joint is yellow.

The specimen mentioned above from New Jersey was standing in collection as *Siphonella pumilionis* Bjerkander, from which it is quite distinct. Along with this specimen was one from Biscayne Bay which is not the same species and clearly belongs to *Siphonella*. The record of *Siphonella pumilionis* in Smith's list of Diptera of New Jersey is based on the specimen above mentioned; thus the record is an error and the species probably does not occur in this country. *Eugaurax* resembles *Siphonella* but may be distinguished by the bristling of the mesonotum and the form of the proboscis, which is not so elongate nor so distinctly geniculated as in that genus.

Botanobia (Oscinis) halterata, new species.

Male: Frons opaque brown, paler anteriorly, surface covered with scattered, fine, pale hairs, the base of each of which is set in a distinct puncture; frontal triangle distinct, glossy black, reaching over two-thirds to anterior margin of frons, ocelli in an equilateral triangle; width of frons a little over one-third the head width, its sides parallel; eyes hairy; antennæ reddish yellow, brownish above on third joint, in size small, third joint disk-like; arista very short, barely longer than length of antennæ, brown in color, distinctly swollen at the base, slightly pubescent; face black-brown, concave in profile, keel indistinct; cheeks narrow, black, marginal hairs rather numerous though weak; proboscis and palpi yellow, the former with apex bent back, but the form not as in *Siphonella*; palpi with distinct though not conspicuous bristles. Mesonotum glossy black; disk

covered with rather long, fine, brown hairs; marginal bristles yellowish-brown; pleuræ glossy black; scutellum of good size, its posterior margin rounded, and the disk slightly flattened; numerous discal hairs and at least two, generally four, post-marginal bristles present; squamæ brown. Abdomen black, glossy, broadly ovate, the segments subequal; numerous surface hairs present, those on last segment rather conspicuous, whitish; length of abdomen about equal to that of thorax; hypopygium rather large, on the left side with a protruding, rather globular, ventral appendage. Legs black, knees, apices of fore and mid tibiæ, and entire tarsi yellowish or reddish; surface hairs on legs pale and very short. Wings grayish, more or less smoky along the fore margin; second costal division barely longer than the first and twice as long as third; veins 3 and 4 subparallel, slightly divergent at extreme apices, fourth ending very little beyond apex of wing; outer cross vein oblique, last section of fifth about twice as long as penultimate section of fourth. Halteres brown, knob black-brown, shining.

Length, 1.5–2 mm.

Type: Cat. No. 15654, U. S. Nat. Mus.

Type locality: Washington, D. C., from birds' nests February 2, 1913 (R. C. Shannon).

The female is identical with the male in every respect except the hypopygium. Fifteen specimens representing both sexes.

The type series is identical in every respect with four specimens from River View, Md., which were reared from egg cocoon of a spider, August 25, 1895. These specimens were recorded by Coquillett as *Siphonella oscinina* Fallen, in Bull. 10, n. ser., Bur. Ent., 1898, p. 75.

THE LARVA OF TRICHOSTIBAS PARVULA

(*Lepidoptera*, *Yponomeutidæ*)

By HARRISON G. DYAR

The curious basket-like, stemmed cocoon of *T. parvula* H. Edwards has long been known, but the larva has escaped observation. I found the cocoons on the base of a large bay tree in Florida many years ago, but never met with the larva. Recently, however, larvæ have appeared in numbers, and I have received a box of living ones from Mr. J. R. Watson, who obtained them from a correspondent in Sea Breeze, Florida,

and sent them to the Bureau of Entomology. They were said to be defoliating the bay trees (*Persea* sp.) in that locality.

The larva is slender, active, with a dull red head, the body blackish with a spotted red dorsal stripe.

Head rounded, strongly bilobed, wider than high; dull, not shining, pale red, shading to whitish below; ocelli black; setæ simple, primary, black and rather coarse. Body cylindrical, slender, tapering markedly posteriorly, anal feet extended; thoracic feet large; abdominal feet long, slender, tapering, the crochets in a single row on the inner half of the planta; segments coarsely annulate and with large, black, conical tubercles, grayish, infiltrated with blackish purple in patches avoiding the tubercles; dorsally and laterally stained with red, forming a geminate patchy dorsal band and an irregular stigmatal line; spiracles minute, circular; tubercles i to iii large, alternating, elevated; iv and v small, united, substigmatically posteriorly; vi posterior; vii on the leg-base surrounded by an orange stain; on the thorax ia + ib, iia + iib, iv + v; cervical shield represented by large border tubercles, itself pale, concolorous with the body; anal plate with black tubercles.

ANOTHER LARVA OF XANTHOPASTIS TIMAIS

(*Lepidoptera, Noctuidæ*)

By HARRISON G. DYAR

When writing on the larval forms of *X. timais* Cramer (Ins. Ins. Men., i, 20, 1913), I overlooked Sepp's figure under the name *amaryllidis* (Surin. Vlind., 63, pl. 28, 1830). Sepp represents an entirely distinct form from those discussed by me. It is from Dutch Guiana. The head is red, the black markings enlarged into bands touching at vertex, not the small separated spots of the other forms. The anal plate is broadly black in the center, with only a red edge. Body without prominent tubercles, agreeing structurally with the continental form, but with numerous rounded pale yellow spots, no bands. The spots are arranged thus: two streaks on each segment near the incisures, representing a dorsal line; two rounded dots in subdorsal row, three in lateral row, the spiracle outlined in yellow, preceded and followed by minute dots.

The markings are much more generalized than in the Floridian form, or the Mexican form. All the dots are of equal size, rounded, without

any tendency to the loss of the central row laterally on the segments or to the enlargement of the posterior row to form a band. In this respect they are more generalized than in the Antillean form, where the posterior spots are enlarged. The absence of the large tubercles places the larva safely with the continental series.

It appears to me that in this peculiar case special names for the larval forms would be of service. The original locality will be the only guide in applying names which are founded on the adult only. In the case of *timais*, the original locality "Coromandel coast" is evidently in error, as this species is not known outside of America; it is impossible to say whether the specimens came from the Guianas or West Indies. As this is the oldest name, it may be retained as a general name for the species and not applied to any larva. The known larvæ separate as follows:

With large conical black tubercles *antillium* Dyar¹
Tubercles rudimentary, inconspicuous.

Spots alike, the posterior segmental row not enlarged . . . *amaryllidis* Sepp

Spots differentiated, the posterior row fused into a band.

Anterior row of one dorsal dot and two lateral dots, all free.

moctezuma Dyar²

Anterior row of one dorsal dot and one lateral, the latter fused to the

posterior band of preceding segment *regnatrrix* Grote³

If I have correctly interpreted the characters, as to which are generalized and which specialized, *E. timais* must have originated as an Antillean species, crossed to the mainland in the vicinity of the Guianas, and migrated thence north and south. Larvæ from Brazil and Argentina should be found to be progressively more specialized southward, though perhaps the specialization will have taken a different course from that shown in the northward distribution of the species.

¹ A good figure of this larva, except that the red-colored parts are too pale, is given by Dewitz (Nova Acta der Ksl. Leop.-Carol.-Deuts. Akad. der Naturf., xlv, 256, pl. viii, fig. 12, 1882).

² A new name for the Mexican larvæ described by me (Ins. Ins. Men., i, 21, 1913).

³ Described from Pennsylvania. I assume it to be the name to be applied to the larvæ from Florida.

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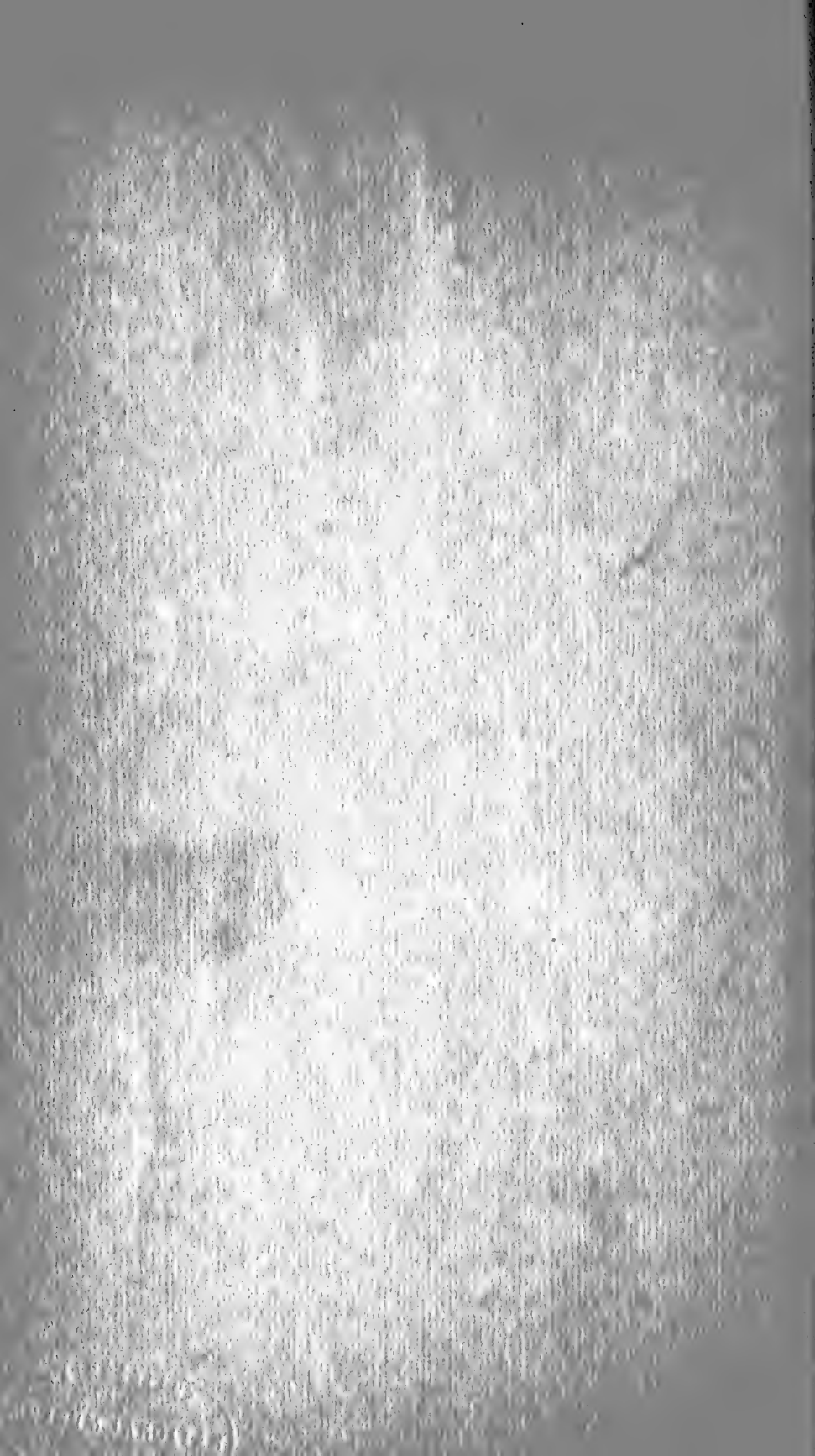
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NOTES ON THE COCOONS OF SOME OF THE SPECIES OF THE GENUS *ACROBASIS*, AND DESCRIPTIONS OF THREE NEW SPECIES, FROM EAST RIVER, CONNECTICUT

By CHAS. R. ELY

During the summer of 1912 the writer was fortunate in finding a number of species of *Acrobasis* quite abundant in East River, Connecticut. A study of the cocoons formed by those species that attach them to their respective food plants showed a great diversity in the form, coloring, etc., of the cocoons. Inasmuch as it is frequently easy to identify a given species by means of its cocoon alone, in cases where several species have the same food plant it seemed desirable to publish the observations made.

***Acrobasis feltella* Dyar.**

This species was said, in the original description, to have been bred from larvæ boring in the petioles of the leaves of hickory. On June 28 a number of cocoons were found on hickory from which there was obtained, early in July, a good series of *A. feltella* Dyar.

The cocoon of this insect is quite small, straight, about 10 mm. long by 3 mm. in diameter, tapering toward the base and ending, at the opposite extremity, in a nearly cylindrical prolongation which is roughly finished with frass. This is in contrast to the smoother surface of the rest of the cocoon, which is dull yellowish in color. It is attached to the midrib of a leaflet, on the under side, not far from its base. The leaflet is slightly drawn down, not folded or drawn together, so as to present a characteristic concave appearance, by means of which the leaves so affected can easily be recognized.

✓ ***Acrobasis caryalbella***, new species.

From the same trees on which *A. feltella* Dyar were to be found there were collected the cocoons of another species having quite a different appearance. The cocoon formed by this species is straight, about 25 mm. long and 4 or 5 mm. in diameter at the widest point. It is dirty white in color, more or less intermixed with or covered by the dark brown frass, especially toward the outer extremity. The point of attachment is at the base of a leaflet, on the under side, the opposite leaflet being frequently drawn close to the first, enclosing the cocoon between them, and the outer portions of the leaflets are usually eaten off. The material from which this insect was obtained was badly parasitized, only two females being obtained. These corresponded to a male obtained in 1910 from the same form of cocoon on hickory, which is the basis of the following description.

Head and basal enlargement of antenna white; antennæ pale yellowish; labial palpi whitish, with the second joint heavily shaded with dark brown; maxillary palpi white; thorax and patagia whitish, with a rosy tint; abdomen yellow gray, shaded with purplish in the middle of the segments, slightly paler below than above. The front legs are whitish speckled with purplish. The middle legs have the coxæ heavily shaded with black along the upper side, below which they are snowy white, while the thorax is here also covered with white scales, and a white tuft of the same extends backward under the fore wing near the base; the femora and tibiæ are whitish speckled with purplish; the tarsi are dark purplish, annulate with whitish at the joints. The hind legs are similar to the middle ones in coloring, the coxæ contrastingly shaded with black above and white below, the tibiæ and tarsi, however, with less purplish and the tibiæ somewhat tufted with long scales above. The fore wings have the basal area, which extends from about one-third of the costal to one-half the dorsal margin, a rosy white, shading into maroon, palest along the costa and near the base; the scale ridge is distinct but not contrastingly marked; along the costa there are a few black scales; the outer portion of the wing is a dark purplish gray, somewhat shaded with maroon, darker along the costa; the outer line is whitish, gently curved outwardly near the middle and shaded with darker scales on the inner side; the posterior extremity of the wing is shaded with dark scales and a parallel line, similarly colored, borders it in the cilia, which are yellow gray; a notch is present in the costa near the base of the wing; on the

under side the fore wings are yellow gray with a smoky tint outwardly, the posterior margin and line in the cilia distinctly outlined; at the base, just beneath the costal margin, is a heavy, short, tapering black patch; the discal dots are not distinctly separated. The hind wings are a smoky yellow gray, darkest outwardly, with the posterior margin and a line in the cilia distinct; on the under side the wings are paler but similarly marked. Expanse, 18 mm.

One male, July, 1910, and two females, July, 1912, from East River, Connecticut (Chas. R. Ely).

Type, No. 15740, U. S. Nat. Mus.

The females of this species are much darker than the male, the whitish tints tending toward yellowish and the rosy tints toward a violet gray. The black markings on the legs and at base of the fore wing, on the under side, of the male are absent in the females.

This insect most nearly resembles *A. feltella* Dyar, from which it may be separated by its larger size and by the fact that *A. feltella* Dyar has, on the under side of the fore wing of the male, a heavy dark shading along the upper margin of the cell while the costal margin is contrastingly whitish.

***Acrobasis kearfottella* Dyar.**

This species, which feeds on hickory, has the habit of attaching its cocoon to a leaf, selecting usually a point near the base of a leaflet, on the under side. The larvæ are probably gregarious at times, as the cocoons may be found in groups of three or four, arranged parallel to one another, with their bases toward the leaf stalk. The leaflet is drawn somewhat loosely about the group of cocoons and the tip is usually eaten away. The individual cocoons comprising the clusters are about 20 mm. long by 4 mm. in diameter at the widest point, horn shaped, nearly straight, in some cases, but often more or less bent or twisted. The outer surface is covered with a dirty white silk, except at the extremity where the rough black frass remains uncovered. Adults were obtained from cocoons and taken at light from July 2 to July 10.

***Acrobasis coryliella* Dyar.**

This species was named by Dr. Dyar from a specimen bred on hazel. On June 27, 1912, a number of *Acrobasis* cocoons were found by the writer on hazel (*Corylus americana*). These cocoons differed in appearance and were divided into two groups and put into separate breeding

jars. From one group a series of four specimens of *A. coryliella* Dyar was obtained about July 12. From the second lot another series was obtained of an entirely different species, which will be referred to later. The cocoon of *A. coryliella* Dyar is about 15 mm. long and 6 mm. in diameter at its widest point. It is quite striking in appearance, the dark frass of which it is constructed being neatly covered with a smooth coating of white silk except sometimes toward the base, where it is gray. It is straight and tapers only slightly toward the base, where it may be as much as 4 mm. in diameter. It is rounded at the outer extremity and the outline of a small circular opening, left open until toward the last and then closed by the larva in spinning its cocoon, is strikingly noticeable.

***Acrobasis ostryella*, new species.**

On June 30, 1912, a few cocoons of an *Acrobasis* were found attached to the webbed leaves of *Ostrya virginica*. From these emerged, from July 10 to 17, two males and one female of a new species the description of which is here given.

Head and antennæ yellowish; labial palpi gray near base, second and terminal joints brown, paler on inner side; maxillary palpi whitish on inside, brown externally. Thorax and patagia lilac above, on the lower side the former is whitish; the scales in front of the fore legs pale lilac gray; abdomen brown, annulate with yellowish. Legs with the coxæ, femora, and tibiæ of the middle and hind legs white shaded with brown; the tibiæ with a terminal cuff of pure white scales with a brown band just above; the tarsi brown, annulate with yellowish at the joints, indistinctly so in the case of the hind legs; the fore legs much more brown than the other pairs. The fore wings pinkish lilac; the scale ridge prominent, black; the basal portion of the wing is much paler than the general color; a triangular black shading, extending from the basal fourth to the middle of the costa and narrowing toward the dorsal area, just beyond the scale ridge; posterior transverse line pale, curved outwardly in the middle, bordered by a narrow black shading inwardly and by another narrow band outwardly, darker than the ground color, beyond which the color is gray; the posterior margin with a row of five or six black dots followed by a faint line in the gray cilia; the costal margin from the middle to the posterior line whitish, beyond which it is bordered with black to the apex; on the under side yellowish shaded with black, costa not so shaded; discal dots separate; notch in costa one-fourth from base.

Hind wings smoky yellow gray, darkest toward the margins, the posterior margins distinctly outlined with dark scales, followed by a similar line in the cilia which are concolorous with the wings; the lower side yellow gray and posterior margins faintly outlined. Under this species are placed the two males and a female, from cocoons on *Ostrya virginica* referred to above. Expanse, 17 mm.

Type, No. 15741, U. S. Nat. Mus.

The cocoons of this insect are short, about 14 mm. in length by 5 mm. in width, covered with dirty white silk, darker toward the base, the apex rounded with a closed opening similar to that of *A. coryliella* Dyar. A single male in the writer's collection, obtained July 10, 1911, from a cocoon, on *Carpinus americana*, similar to those on *Ostrya virginica*, is at present somewhat doubtfully referred to this species.

The second lot of cocoons found on hazel, which were separated from those producing *A. coryliella* Dyar, yielded, July 10 to 16, 1912, a series of five adults, three males and two females. Four of these seem to differ from any known species of *Acrobasis*, which is also true of a male in the collection of the Connecticut Agricultural Experiment Station, bred from a pupa collected on hazel, June 9, 1911, at Hartford, Connecticut, by Dr. W. E. Britton. The fifth specimen corresponds quite closely to *A. ostryella*, but it is thought that the presence of this single cocoon on hazel may have been accidental. It is possible that *A. ostryella* may feed on both *Ostrya* and *Corylus*, but this does not seem probable and the writer believes there is sufficient ground for taking the series of five specimens, which closely correspond to one another, as the material for the description of the following new species, which is based on one of them.

***Acrobasis secundella*, new species.**

Head and antennæ yellow gray; labial palpi fuscous; maxillary palpi yellow gray; thorax yellow gray above with a slight rosy tint, white below; abdomen yellow gray, annulate with brown on each segment. The legs are whitish speckled and shaded with brown, almost pure white on inner side near thorax; the tibiæ of the hind legs with a brush of appressed long yellowish scales above. The fore wings are a dark brown gray, the basal area, to just beyond the scale ridge, paler in color with whitish and pinkish scales; the scale ridge thick and black edged with white toward base and followed by a faint pinkish shading; the median

portion of the wing, including the discal dots, light gray; outer transverse line very faintly indicated in the pale gray cilia; discal dots separate and distinct; a slight depression in the costa nearly one-third from base; on the under side the wings are of a dark, shining yellow gray, with no markings, and with concolorous cilia. The hind wings are yellow gray with the posterior extremity edged with dark scales and a dark line in the cilia parallel to the margin of the wing; on the under side the color is a pale, shining yellow gray with somewhat paler cilia.

Expanse, 16 mm.

Type, No. 15742, U. S. Nat. Mus.; East River, Connecticut, July 13, 1912 (C. R. Ely).

The cocoons of this species are rough, nearly black, and taper considerably toward the base, ending in a crooked horn-shaped prolongation giving a total length of about 20 mm. and a maximum diameter of about 5 mm.

***Acrobasis rubrifasciella* Packard.**

Hulst says in his original description of *Acrobasis comptoniella* (Trans. Am. Ent. Soc., XVII, 125, 1890) that he can "find no point of distinction in the imagines" between the latter species and *A. rubrifasciella* Pack. A series of 15 or more specimens, obtained from cocoons on alder, serves to show that the two species are easily distinguishable. In *A. comptoniella* Hulst the red transverse band, which follows the scale ridge, is in striking contrast to the rest of the wing, which, beyond this point, is without the slightest red tint. In *A. rubrifasciella* Pack. the red is paler, with more of a lilac tint, and the reddish shading does not take the form of a sharply defined band, following the scale ridge, but tends to be diffused more or less uniformly over the whole wing surface. Rarely specimens are found in which the red is almost entirely absent and in these cases the appearance approaches that of *A. betulella* Hulst.

The cocoon is formed as the prolongation of the twisted or bent horn-shaped case, which is 20 to 25 mm. long by 5 or 6 mm. in diameter and is neatly rounded and closed at the outer end.

***Acrobasis comptoniella* Hulst.**

This insect is said to feed upon both sweet fern (*Comptonia asplenifolia*) and bayberry (*Myrica cerifera*). Cocoons were found in abundance on both of these food plants, of the well known nearly globular type, the cocoon being formed as a prolongation of the tapering and

twisted case. The moths which emerged from the cocoons found on bayberry were, in nearly all cases, smaller than those from sweet fern, measuring about 18 to 21 mm. in expanse in the former and 22 to 23 mm. in the latter. As a rule the basal area, within the scale ridge, and median portion of the wing above and including the discal dots, is much paler and the posterior line more distinct than is the case with the form from sweet fern. It seems quite probable that we have here two distinct species, but if this is true, they are so close that more evidence is needed before separating them.

Acrobasis betulella Hulst.

The nearly globular cocoons of this species, which have been sufficiently described by Hulst (Trans. Am. Ent. Soc., XVII, 125, 1890), were found in abundance on *Betula alba* and a good series of moths was obtained from them.

A NEW PSEUDOPHYLLIID FROM JAMAICA

(Orthoptera, Locustidae)

By A. N. CAUDELL

In a small lot of Orthoptera sent to the National Museum for determination by W. R. B. Robertson was a new species of *Jamaicana*. This genus was described from Jamaica and is probably confined to that island, the *Meronicidius lativittata* of Walker, a South American species listed in this genus by Kirby, probably not belonging here.

The above mentioned new species I have designated as *Jamaicana flava* in reference to the general yellowish color, which is very different from the brownish cast of the other species of the genus. Structurally the species of *Jamaicana* are very similar but the coloration of *flava*, a comparatively clear yellow, will serve to readily distinguish it from its browner relatives. The pronotal disk is also distinctive in color, being uniformly piceous. The three species now known to surely belong to *Jamaicana* may be separated as follows:

KEY TO THE SPECIES OF JAMAICANA

General color brownish; pronotal disk not uniformly black.

Pronotal disk concolorous with the lateral lobes . . . *uniformis* Brunner

Pronotal disk marked longitudinally along the latero-dorsal margins with

black *subguttata* Walker

General color yellowish; pronotal disk uniformly black . . . *flava* n. sp.

The type of *flava* measures as follows: Length, pronotum, 10 mm.; elytra, 36 mm.; hind femora, 25 mm.

A paratypic male is also present and is essentially like the type except it is somewhat smaller, measuring as follows: Length, pronotum, 8.5 mm.; elytra, 28 mm.; hind femora, 18 mm.

Type, ♂, Jamaica, August, 1912. Altitude, 2,000 to 3,000 feet. W. R. B. Robertson, collector. Paratype, ♂, same data as the type.

Type and paratype, Cat. No. 15717, U. S. Nat. Mus.

THE LARVA OF DELIAS HENNINGIA ESCHSCHOLTZ

(*Lepidoptera, Pieridæ*)

By HARRISON G. DYAR

The larva of this butterfly was briefly described by Semper after a drawing by Otto Koch (Schmett. Phil. Inseln, 234, 1890). He calls it red-brown, which in my opinion is too dull a color. The larvæ are rather dark crimson, with light yellow bands. Professor C. F. Baker sent me some specimens, which he found at Los Baños, Philippine Islands, in a large company making their way slowly down the trunk of a *Cordia blancoi* tree. They pupated immediately when collected.

The head is rounded, a little higher than wide, black, granular, with numerous small black secondary hairs and three long single coarse yellow ones, representing primary tubercles i, ii, and iii of the epicranial lobe. Body cylindrical, tapering slightly at the ends, dark crimson with a narrow bright yellow band across each segment, from the base of the foot across the spiracle, on the anterior fourth of the segment on joints 3 to 13, that on joint 13 reduced. Anal shield, thoracic feet, and the small leg-plates black. Skin densely covered with minute secondary hair; a small coarse seta for tubercle i, a very long coarse bright yellow one for ii, none visible for iii, a smaller but still long yellow hair for iv and for v, the tubercles approximated but iv high above v yet well below the spiracle, two small yellow hairs on the leg-base posteriorly. Leg-shields densely hairy with short black hairs. Abdominal feet with an inner row of crochets of three lengths and a small outer row; feet of anal segment with the inner row of crochets bent around anteriorly to the outer side.

A GALLERIINE FEEDING IN CACAO PODS

(*Lepidoptera, Pyralidæ*)

By HARRISON G. DYAR

The following new genus may best be placed in the Galleriinae:

Tineopsis, new genus.

Fore wing parallel-sided, tip roundedly tapered; 10 veins: 2 well before end of cell; 3-4 stalked; 5 absent; closing vein of cell obsolete below; 6 free, below tip of cell; 7-9 stalked, 7 and 8 coincident; 10 and 11 from the cell, free. Hind wing elongate, trigonate, the tip produced and outer margin a little excavate below it; 7 veins: 2 before end of cell; 3-4 forming a long stalk, forked just on the margin; 5 absent; 6 separate; 7 and 8 anastomosing. Tongue completely absent. Palpi of ♂ slender, upcurved nearly to vertex, covered with dense vestiture and appressed to the vertical tuft; of ♀ rostriform, rather thick, porrect, the end joint drooping, exceeding the long frontal tuft. Eyes large, round. Basal joint of antennæ flattened, forming an eye-cap. Hind tibiae with four long spurs.

Tineopsis theobromæ, new species.

Dark gray; fore wing without markings. Hind wing paler, silky gray. The head is heavily tufted and with the narrow, pointed wings gives the insect the aspect of a Tineid. Expanse, 13-15 mm.

Cotypes, two ♂, one ♀, No. 15718, U. S. Nat. Mus.; bred from "cacao bean" at Pittsburgh, Pennsylvania, January 8, 1913 (Pennsylvania Chocolate Co.).

NOTE ON THE SYSTEMATIC POSITION OF PSEUDACONTIA RHIZOLEUCA BRABANT

(*Lepidoptera, Noctuidæ*)

By HARRISON G. DYAR

The late Edouard Brabant recently described a noctuid from French Guiana as *Pseudacontia? rhizoleuca* (Bull. Soc. Ent. France, 1912, No. 15, p. 330). He places it in the "Acronyctæ" but uses a genus (*Pseudacontia* Smith) of the Erastrinae. Some specimens are before me from Mr. Schaus's collecting. I find difficulty in placing them. Vein 5

of the hind wing is somewhat reduced in size, being about two-thirds the size of vein 4, and arises slightly below the middle of the discocellulars. If placed in the Acronyctinæ, it falls by Hampson's tables into *Bagisara* Walker; if in the Erastrinæ, into *Eustrotia* Hübner. Where the differential character is so nicely balanced and the larva unknown, characters of facies may properly be considered. The colors and style of maculation suggest *Palindia merta* Schaus (= *Homopyralis albifasciata* Schaus). This species is now placed in *Lithacodia*, which is the genus next to *Eustrotia* in the Erastrinæ. The indications are, therefore, that the form under discussion belongs to the Erastrinæ. It may be separated from *Erastria* by the position of vein 5 of the hind wing, which arises considerably nearer the middle of the cell than in that genus. I therefore propose the new generic term **Brabantia**, in honor of the describer. *Brabantia rhizoleuca* was described from females, as the description shows, although not so stated. I possess a male, which shows some peculiar differences. The hind wings are white with a brown border, widest at the apex, not entirely brown as in the female. The palpi have the third joint short and thick, not as long as wide, whereas that joint in the female is markedly long, nearly half as long as the second joint, which reaches the vertex of the head, thus presenting a marked structural difference in the sexes.

FOUR NEW SPECIES OF NORTH AMERICAN CHLOROPIDÆ

(Diptera)

By J. R. MALLOCH

Tricimba spinigera, new species.

Female: Frons opaque, black-brown, anteriorly yellowish, breadth at vertex slightly less than at anterior margin, at narrowest part rather more than one-third the width of head; ocellar region and frontal triangle shining black, the latter very short, not exceeding one-half the length from vertex to anterior margin, a central, pale line carried from anterior angle of triangle to anterior margin of frons; surface hairs short, sparse, pale; antennæ small, half hidden below the slightly projecting frons, yellow, the third joint sometimes browned above; arista brown, pale at base, the basal two joints hardly swollen, bare; face yellow, concave in profile,

the anterior margin of cheeks slightly produced; cheeks of moderate and regular width, yellow, the upper portion white pollinose, the lower margin narrowly browned; palpi and proboscis yellow. Mesonotum black, shining, slightly gray dusted; the center line of punctures single, narrow; the two outer lines broad and deep, all three lines opaque; each side of the furrows, or lines of punctures, has a series of short, pale hairs arranged closely on the margins, between the central and outer furrows there is a single line, on each side, of similar hairs, and beyond the outer furrows the hairs are more irregularly arranged; pleuræ black-brown, gray dusted; scutellum subglobose, black, the surface slightly warty in appearance and with scattered, pale hairs as on mesonotum, margin with four short tubercles, on the apices of each of which is a pale, short, thorn-like bristle. Abdomen short and broad, shining black, or black-brown, venter yellowish; surface hairs pale. Legs yellow, generally with all femora darkened on middle, and the hind tibia with a brown band near base and another near apex; the other tibiæ are sometimes darkened on the basal half; tarsi pale except the apical joint, which is brown. Wings clear, veins black-brown; third and fourth veins upward bent, but slightly divergent; outer cross vein very acutely placed, almost parallel with the hind margin of wing; last section of fifth vein distinctly longer than penultimate section of fourth. Halteres yellow, knobs whitish.

Length, 1 mm.

Male: Similar to female in all respects but as a rule more distinctly varied in color of legs; the hypopygium is of normal size, shining black.

Type: Cat. No. 15672, U. S. Nat. Mus.

Locality: Rock Creek, District of Columbia (R. C. Shannon). Taken from old birds' nests February 10, 1913.

Paratypes: Same locality as type, 38 specimens representing both sexes; 1 specimen District of Columbia (collection Coquillett); and one Plummers Island, April 19, 1903 (H. S. Barber).

This species probably has no connection with birds' nests other than in its selection of them as its hibernation quarters, as I have seen several specimens reared from *Morchella esculenta* and *M. conica* by F. J. Veihmeyer, Takoma Park, District of Columbia, April-May, 1912.

Botanobia (= Oscinis) confusa, new species.

Male: Yellow, shining. Antennæ black, the basal two joints paler; frontal triangle more or less brown or black. Mesonotum highly pol-

ished, the disk reddish-yellow, or with indications of three brownish yellow stripes. Abdomen brown or brown-black. Legs with only the tarsi slightly browned. Wings slightly grayish; veins brown.

Frontal triangle slightly rounded on posterior lateral margins, where it falls short of reaching the margins of frontal stripe, and distinctly short of reaching anterior margin of frons; surface hairs on frons black, those on lateral margins setulose; arista with rather distinct pubescence; proboscis and palpi normal; cheeks narrow, about one-sixth the height of eye, lower half with numerous, distinct hairs; eyes shortly but distinctly haired. Hairs on mesonotum pale, rather long and numerous, bristles black; pleuræ unmarked; scutellum paler than mesonotum, convex, outline regularly rounded, disk bare, four marginal bristles present, the apical two very long and widely separated, the basal two very short, and close to the apical pair, sometimes there is also present a small hair on each side anterior to the basal bristle. Abdomen slender, longer than thorax, highly shining, the surface hairs yellowish. Legs thickly covered with pale hairs. Wings narrow; costa and posterior margin with unusually long marginal hairs; second costal division about one-third longer than third; third and fourth veins subparallel; last section of fifth vein distinctly longer than penultimate section of fourth, and not reaching wing margin; outer cross vein with its upper extremity distinctly nearer to wing tip than its lower. Halteres yellow, knob pale yellow.

Length, 1.5 mm.

Type: Cat. No. 15673, U. S. Nat. Mus.

Locality: Bayamon, Porto Rico, January, 1899 (Busck).

Paratypes: Utuado and Aguadilla, Porto Rico, and Vieques Island, January and February, 1899 (Busck). Both sexes, 7 specimens. Female similar to the male in color, etc.

This species has been recorded by Coquillett (Proc. U. S. Nat. Mus., vol. 22, 1900) as *Oscinis virgata* Coq. While close to that species in some respects it differs in being smaller, in having the mesonotum unstriped, or indistinctly striped, in having the pleuræ unspotted, and in the less thickened arista, etc. *Confusa* is more nearly allied to *mitis* Williston (*Oscinis*) than to Coquillett's species, but *mitis* has the antennæ entirely yellow, and differs in several other respects from *confusa*. Becker's species, *rubicunda*, comes close to *confusa* but he gives the third and fourth veins as parallel in his description, while there are other minor differences also present.

Botanobia (=Oscinis) catalpæ, new species.

Female: Glossy black; anterior margin of frons, antennæ, palpi, fore coxæ, and all tarsi yellow, more or less tinged with brown. Face brownish, and, with cheeks on upper half, silvery white pollinose. Halteres yellow, with white knob. Wings vitreous, veins yellow.

Frons highly glossy, with numerous slight longitudinal striæ; frontal triangle rather narrow and ill-defined, occupying slightly more than one-half the width of frons at vertex, reaching almost to anterior margin; width of frons about equal to that of either eye at anterior margin, distinctly wider at vertex; surface hairs absent except for some along the margins of the frontal triangle; eyes bare, elongate, the length being about 1 1-3 that of the height; face concave in profile, keel slight; cheek about one-third as high as eye, and of almost regular height on its entire length, the lower half glossy brown from near anterior margin, and meeting the concolorous occiput, rather wider than at its anterior portion; marginal hairs on cheek weak, pale; palpi large, rather spatulate, slightly projecting, almost bare; antennæ of average size, third joint disk-like, arista hair-like, bare, basal joints slightly thickened, length of arista barely more than that of breadth of frons at anterior margin. Mesonotum thickly covered with pale hairs, each of which is set in a shallow puncture; scutellum flattened on surface, in outline rounded, disk with numerous hairs, except at base, and with distinct punctures, margin with two closely approximated long bristles and two short ones, at the base of each of which there are very slight indications of a swelling on the margin. Legs rather stout, surfaces covered with short, pale hairs. Wing with second costal division twice as long as third; third and fourth veins slightly divergent, third turned up at apex, and ending rather farther from apex of wing than usual; outer cross vein at an acute angle and slightly bent, the upper extremity distinctly nearer to apex of wing than the lower.

Length, 1.5 mm.

Type: Cat. No. 15743, U. S. Nat. Mus.

Locality of type: Germantown, Pennsylvania.

Locality of other specimens in collection: North Bend, Ohio.

Reared from larvæ found in pods and seeds of *Catalpa*.

This species was identified as *Oscinis longipes* Loew,¹ which is a slender species with black palpi. The nearest described species to *catal-*

¹ Bull. 10, n. ser., U. S. Dept. Agr., Div. Ent., p. 74, 1898.

pæ is *magnipalpis* Becker, which has the frons almost twice as wide as either eye, dark reddish brown in color, and red anteriorly; surface of frons with short black hairs; frontal triangle reaching only to middle of frons; legs, including fore coxæ, reddish yellow, femora and tibiæ broadly brown.

Eugaurax insularis, new species.

Female: Yellow, subshining. Frons opaque yellow, width barely more than equal to that of either eye; triangle short, not half as long as frons, subshining, surface hairs, pale short, bristles as in *E. floridensis* Malloch; ocellar region black; face, cheeks, and antennæ yellow, third joint of antennæ slightly darkened above, arista slightly longer than width of frons, yellow at base, brown apically, not swollen, sparsely and shortly pubescent; cheeks about one-eighth the height of eye; eye about one-third higher than long, hairy; palpi and proboscis yellow. Mesonotum with 6 black vittæ, the middle pair narrowly separated, the submarginal pair posteriorly abbreviated, the pair above wing base short and spot-like; the bristling as in *floridensis*, but there are 5-6 notopleural bristles present; pleuræ immaculate; scutellum with two strong, black, apical bristles, and numerous weaker bristles irregularly arranged on lateral margins. Abdomen with all segments suffused with brown; surface covered with weak, pale hairs. Legs entirely yellow; claws black, rather long. Wings clear; second costal division nearly three times as long as third; outer cross vein slightly oblique; veins almost colorless. Halteres yellow.

Length, 1.5 mm.

Type: Cat. No. 15744, U. S. Nat. Mus.

Type locality: Fajardo, Porto Rico (Busck).

Paratype: Bayamon, Porto Rico (Busck).

The only other species of this genus was described in April, 1913, *Ins. Insc. Mens.*, p. 46.

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Insecutor Inscitiae Menstruus

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Insecutor Inscitiae Menstruus

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TWO NEW THYSANOPTERA FROM PORTO RICO

By J. DOUGLAS HOOD

The thrips of Porto Rico are almost entirely unknown. The only record of any named species occurring on the island seems to be in a footnote of a recent paper by H. M. Russell,¹ in which he states that *Mesothrips ficorum* Marchal "causes injury to various species of Ficus in Key West, Cuba, and Porto Rico." Below, two additional species, both new, are described from material generously referred to me by Mr. Russell. They were collected by Mr. Thomas H. Jones, of the Estación Experimental de la Asociación de Productores de Azúcar, Rio Piedras, Porto Rico, and are of interest in increasing our scant knowledge of the Neotropical Thysanoptera.

Suborder TEREBRANTIA Haliday

Family THRIPIDÆ Haliday

Genus HETEROTHRIPS Hood

Aug. 22, 1908.—*Heterothrips* Hood, Bull. Ill. State Lab. Nat. Hist., Vol. VIII, Art. II, p. 361; type, *H. arisemæ* Hood (monobasic).

Dec. 5, 1908.—*Phyllothrips* Buffa, Redia, Vol. V, fasc. I, p. 123; type, *P. pilosus* Buffa (monobasic). (Nec *Phyllothrips* Hood, Can. Ent., Vol. XL, No. 9, p. 305, Sept., 1908.)

1910.—*Heterothrips* Bagnall, Ann. Soc. Ent. Belg., Tome LIV, p. 461.

1912.—*Phyllothripsiolus* Strand, Int. Ent. Zeitschr., 5 Jahrg., No. 40, p. 287.

1912.—*Heterothrips* Bagnall, Ann. Mag. Nat. Hist., ser. 8, Vol. X, p. 222. (Erects the family *Heterothripidæ*.)

¹The Red-Banded Thrips. Bull. 99, Pt. II, Bur. Ent., U. S. Dept. Agr., pp. i-iv, 17-29, Pls. IV, V, Dec. 14, 1912.

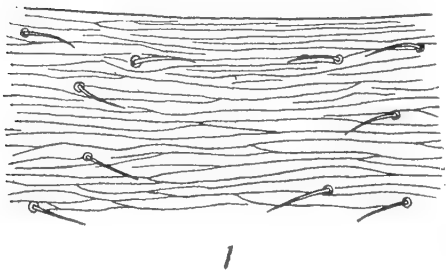
This genus is now known from the United States, Mexico, and Paraguay, and includes the species *arisæmæ* Hood, *decacornis* Crawford, *pilosus* Buffa, and *salicis* Shull. The following Porto Rican species seems distinct from all, though closest to *pilosus*, and extends the range of the genus into the West Indies.

Heterothrips sericatus, sp. nov. (Pl. I, figs. 1, 2).

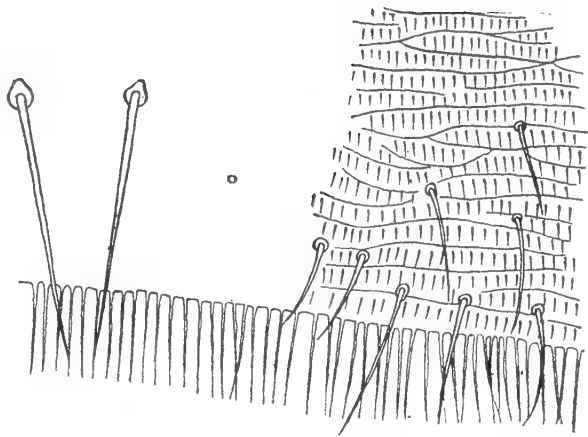
Female.—Length, about 1.15 mm. Color dark blackish brown, thorax tinged with rufous; legs of first two pairs lemon yellow, posterior femora and tibiæ largely brown; antennal segments 2–5 largely pale yellowish gray, 3 and 4 often orange at apex; fore wings uniform dark brownish gray, with white dot on costal margin above scale.

Head about 1.25 times as wide as median dorsal length, distinctly shorter than prothorax, narrower across eyes than near base, transversely impressed just behind eyes, closely transversely striate, the striæ strongest in posterior third; cheeks swollen, arcuate, with a few short spines behind eyes; vertex semicircularly hollowed, bearing anterior ocellus at the bottom of declivity. Eyes setose, rather more than half as long as head, as wide as their dorsal interval, facets well separated. Ocelli of posterior pair elevated, twice the diameter of anterior ocellus, five-eighths as wide as their interval. Antennæ about three times as long as head, 9-segmented; segment 3 slender, conical, three times as long as wide, slightly narrowed apically, with each of its two basal eighths separated by rather deep incisions, apical sensoria exceedingly minute; 4 oblong, twice as long as wide, only slightly narrowed at base, without pedicel; 5–8 elongate barrel-shaped, with sense cones; 9 cylindrical, three times as long as wide; segments 1 and 2 nearly concolorous with head, 2 pale in apical half, nearly black at base; 3 and 4 yellowish white, shaded with gray at apex, where there is usually some bright orange hypodermal pigment; 5 grayish white in basal two-thirds or three-fourths, blackish brown beyond; 6–9 blackish brown, 6 sometimes paler at base. Maxillary palpi 3-segmented.

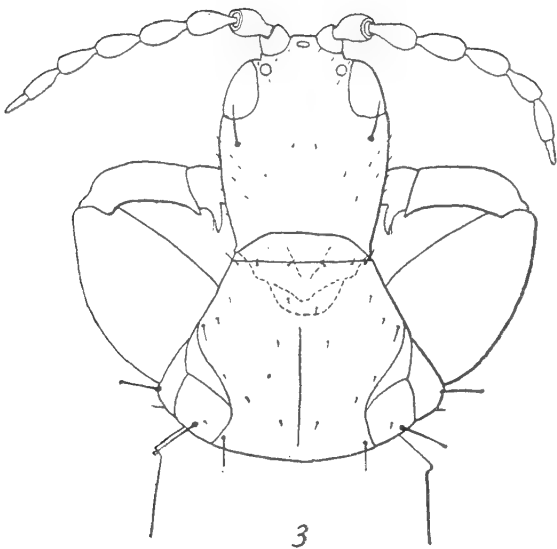
Prothorax about 1.2 times as long as head, sides and posterior margin evenly rounded, anterior margin straight; notum with exceedingly fine, close, transverse striæ and with many short spines, evenly distributed except for a bare median area. Wings of fore pair half as wide at middle as near base, the greatest subbasal width (exclusive of scale) one-ninth the total length of wing; costal margin and the two longitudinal veins



1



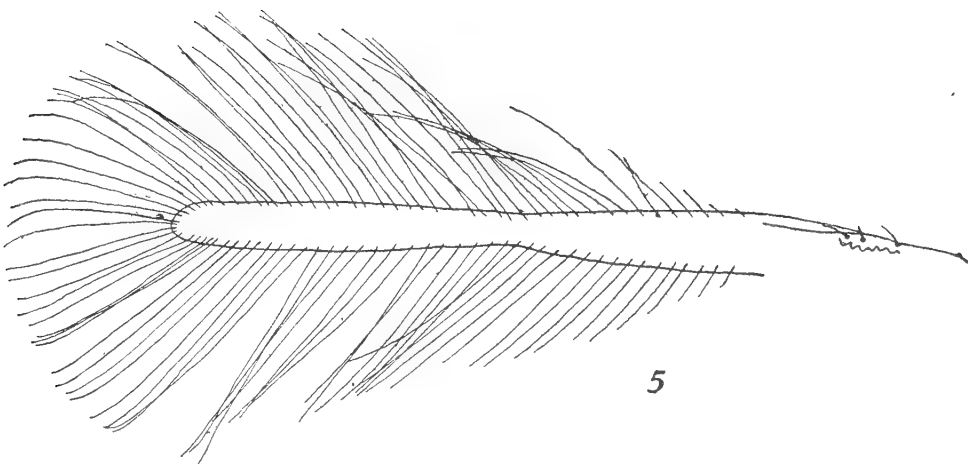
2



3



4



5

EXPLANATION OF PLATE

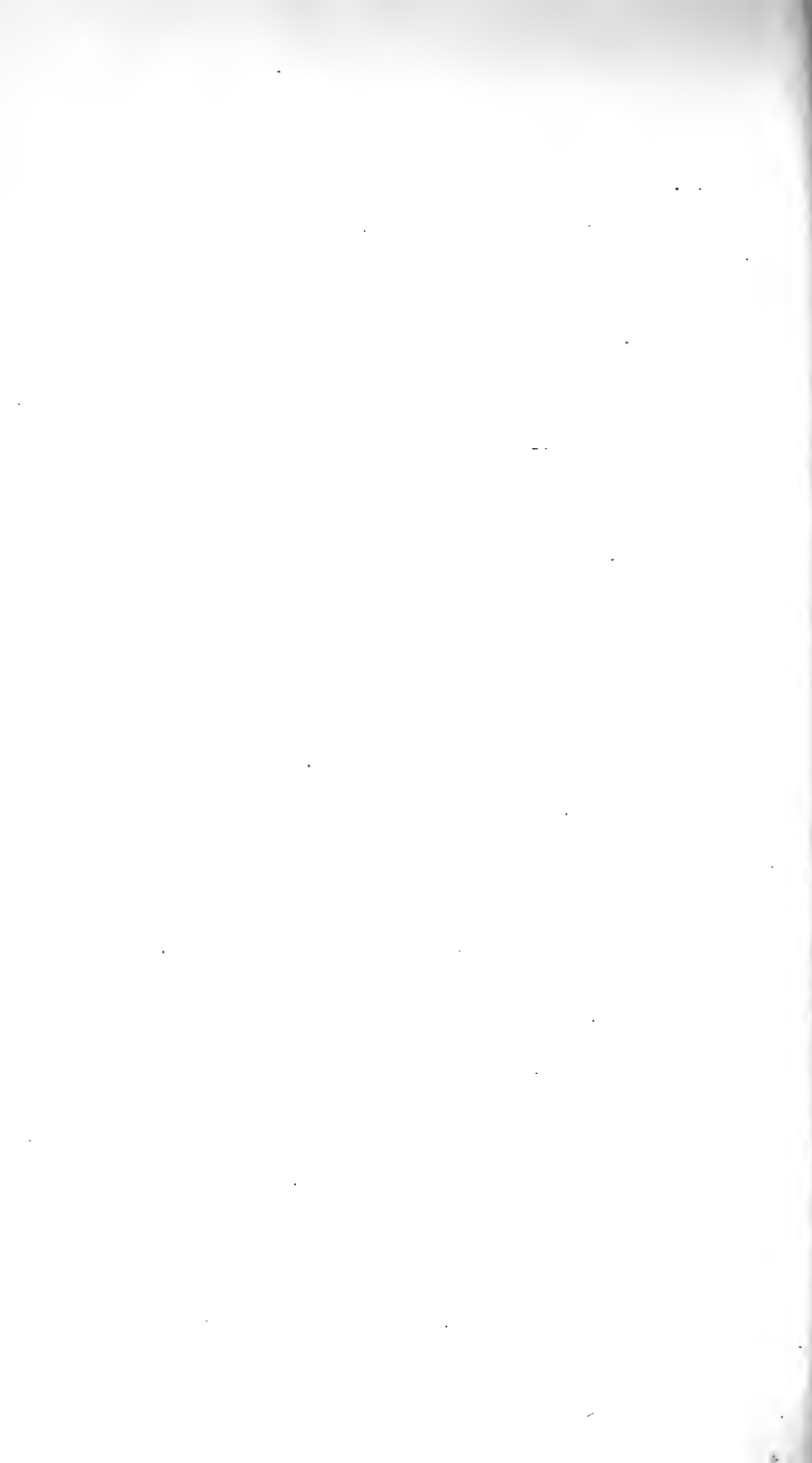
Fig. 1.—*Heterothrips sericatus*, sp. nov., median portion of anterior margin of pronotum, female

Fig. 2.—*Heterothrips sericatus*, posterior margin of notum of sixth abdominal segment at right of median line, female.

Fig. 3.—*Podothrips semiflavus*, gen. et sp. nov., head and prothorax, female.

Fig. 4.—*Podothrips semiflavus*, tube, female.

Fig. 5.—*Podothrips semiflavus*, left fore wing, female.



each with about 33 spines, which are shorter and closer together toward base. Legs of first two pairs yellow, rarely with femora lightly shaded with brown; posterior legs brown, tarsi and extremities yellowish.

Abdomen stout, lanceolate, and, except under wings, with close transverse striæ and dense minute pubescence as in *Sericothrips*; posterior margin of segments 1-8 prolonged into numerous, minute, slender spines, except for a brief space each side of the dorsal median line of segments 2-5, and the entire median region, both above and below, of segment 1.

Measurements: Length 1.14 mm.; head, length 0.104 mm., width 0.132 mm.; prothorax, length 0.124 mm., width 0.212 mm.; pterothorax, width 0.264 mm.; abdomen, width 0.348 mm. Antennal segments: 1, 21 μ ; 2, 38 μ ; 3, 69 μ ; 4, 45 μ ; 5, 36 μ ; 6, 33 μ ; 7, 17 μ ; 8, 18 μ ; 9, 15 μ ; total length of antenna, 0.29 mm.; width at segment 4, 0.022 mm.

Male.—Length about 0.94 mm. Color orange yellow; head brown, darker in front; abdominal segments grayish above; legs pale grayish yellow; antennal segments 2-5 largely pale yellowish gray, 3 and 4 orange at apex; wings of fore pair dark brownish gray, much paler in basal fourth. In structure much like female.

Measurements of allotype: Length 0.936 mm.; head, length 0.100 mm., width 0.128 mm.; prothorax, length 0.108 mm., width 0.168 mm.; pterothorax, width 0.216 mm.; abdomen, width 0.168 mm. Antennal segments: 3, 66 μ ; 4, 45 μ ; 5, 33 μ ; 6, 34 μ ; 7, 17 μ ; 8, 18 μ ; 9, 15 μ .

Described from 33 females and 4 males, taken in flowers of Guava (*Psidium guajava* L.), Rio Piedras, Porto Rico, June 11, 1912, by T. H. Jones.

This is a very distinct species, the silky pubescence and transversely striate prothorax separating it at once from *arisæmæ*, *salicis*, and *deacornis*. Buffa's briefly described *pilosus*, from Paraguay, differs in the globose form of segments 5-9 of the antennæ and the larger fourth segment.

Suborder TUBILIFERA Haliday

Family PHLÆOTHIRIPIDÆ Uzel

Genus PODOTHIRIPS nov.

(Πόβς, the foot; θρῦψ, a wood worm)

Body depressed, glabrous. Head longer than wide, much narrowed toward base, widest behind eyes, about equal in length to prothorax,

evenly declivous in front, emarginate above at base; cheeks finely roughened, without spiniferous tubercles. Eyes less than one-third as long as head, half as wide as their interval. Ocelli placed far forward, the median one between basal segments of antennæ; posterior ocelli most widely separated. Antennæ 8-segmented, the last two segments not compactly united. Mouth cone blunt, much shorter than its width at base. Prothorax about as long as head, more than twice as wide at base as at apex, lobed behind, with median dorsal thickening, lateral outline concave. Legs of moderate length, stout; fore femur nearly as long and broad as head; fore tibia with a stout tooth at tip in both sexes; fore tarsus armed with a long, stout tooth. Wings slender, narrowed at middle; fringe sparse and weak, on fore wing not double along posterior margin near apex.

Type: *Podothrips semiflavus*, sp. nov.

The long prothorax and narrowed wings ally this genus very closely to *Haplothrips* Amyot et Serville, from which it is separable in both sexes by the armed fore tibia and tarsus, the enlarged fore femur, the form of the head and prothorax, and the sparse, simple fringe of the fore wing. The tibial tooth suggests *Kladothrips*, *Oncothrips*, *Onychothrips*, and *Plectrothrips*.¹

Podothrips semiflavus, sp. nov. (Pl. I, figs. 3-5).

Female.—Length about 1.6 mm. Surface shining. Color golden yellow, with head, sides of metathorax, and last three abdominal segments abruptly dark blackish brown; abdominal segments 3-8 with a transversely elongate dark spot above, near base; legs yellow; antennæ yellow, usually with segment 1, sides of segment 2, apex of 5 and 6, and all of 7 and 8 darkened with brown.

Head 1.2 times as long as wide, broadest slightly behind eyes, thence narrowing roundly and abruptly to base, where there is a slight neck-like constriction; vertex rounded and evenly declivous; dorsal surface without sculpture; cheeks finely roughened, sparsely and briefly spinose; postocular bristles pointed, three-fifths as long as eyes. Eyes less than one-third as long as head, separated by twice their width, not protruding, ventral extent very slightly less than dorsal. Ocelli anterior in position, the posterior pair one and two-thirds times as far from each other as from the

¹ This name is spelled "*Plectrothrips*" by Moulton on pages 12 and 31 of his "Synopsis, Catalogue, and Bibliography of North American Thysanoptera," Tech. Ser. 21, Bur. Ent., U. S. Dept. Agr. The error should be noted and corrected.

median ocellus. Antennæ nearly 1.6 times as long as head, moderately slender; segment 1 nearly as broad at base as long; 2 slenderer than 1, two-thirds as broad as long; 3 clavate, narrower than 2, twice as long as wide; 4-6 nearly similar in form to 3, successively decreasing in length and breadth; 7 elongate, slender, about two and one-half times as long as broad and two-thirds as wide as 3; 8 subconical, slightly narrowed at base, two-thirds as long as 7; sense cones short and weak.

Prothorax very slightly shorter than head and (inclusive of coxæ) twice as wide at base as at apex and 0.7 as long as wide; lateral outline concave; surface smooth; median dorsal line distinctly chitinized; all usual bristles present, the anterior marginals greatly reduced; anterior angulars and midlaterals pointed, one-third as long as postoculars; posterior angular and coxal longest, fully equal to postoculars, capitate; posterior marginals shorter, pointed. Pterothorax about as wide as base of prothorax, sides nearly straight, converging posteriorly. Legs stout, of moderate length; fore femur equal in length to head, 1.6 times as long as broad; fore tibia stout, scarcely as long as width of femur, with a stout, prominent tooth on inner side of apex; fore tarsus with a long, strong, curved tooth about three-fifths as long as tarsus. Wings long, slender, weak, colorless, without double subapical fringe.

Abdomen slender, slightly wider than pterothorax. Tube about 0.6 as long as head, basal fourth slightly swollen and twice as wide as the somewhat constricted apex; terminal bristles brown, one and one-half times as long as tube; all other abdominal bristles pale.

Measurements of holotype (female): Length 1.6 mm.; head, length 0.228 mm., width 0.188 mm.; prothorax, length 0.216 mm., width at apex 0.150 mm., at base 0.292 mm.; pterothorax, width 0.312 mm.; abdomen, width 0.336 mm.; tube, length 0.138 mm., width at base 0.064 mm., at apex 0.032 mm. Antennal segments: 1, 36μ ; 2, 46μ ; 3, 56μ ; 4, 51μ ; 5, 49μ ; 6, 44μ ; 7, 45μ ; 8, 30μ ; total length of antenna, 0.36 mm.; width at segment 3, 0.028 mm.

Male.—Smaller and slenderer than female (length about 1.3 mm.); otherwise nearly similar.

Measurements of allotype (male): Length 1.3 mm.; head, length 0.198 mm., width 0.161 mm.; prothorax, length 0.180 mm., width at apex 0.118 mm., at base 0.246 mm.; pterothorax, width 0.240 mm.; abdomen, width 0.240 mm.; tube, length 0.114 mm., width at base 0.053 mm., at apex 0.027 mm. Antennal segments: 1, 33μ ; 2, 42μ ;

3, 48μ ; 4, 44μ ; 5, 43μ ; 6, 40μ ; 7, 42μ ; 8, 29μ ; total length of antenna, 0.32 mm.; width of segment 3, 0.025 mm.

Described from eight females and three males, collected by Mr. T. H. Jones on "para grass" or "malojillo" (*Panicum barbinode* Trin.), at Guanica, Porto Rico, March 9, 1912. "It may be of interest to add that, accompanying this thrips between the leaf sheaths and stalks of the grass, there occurred a scale insect which Mr. E. R. Sasser, of the Bureau of Entomology, U. S. Department of Agriculture, has identified as *Odonaspis* sp." [Jones, in litt.]. Mr. Sasser has subsequently informed me that along with the aforementioned scale there occurred specimens of *Targionia sacchari* (Ckll.).

The coloration is somewhat suggestive of *Zygothrips pallidus* Hood, described from Texas. It is not at all closely allied to that species, however, nor to any other described one.

NOTES ON THE GENUS MIEZA WALKER, WITH DESCRIPTIONS OF THREE NEW SPECIES FROM COSTA RICA

(*Lepidoptera, Yponomeutidae*)

By AUGUST BUSCK

In Volume II, pp. 142-144, of the excellent "Contributions to the Natural History of the Lepidoptera of North America," by Drs. William Barnes and J. H. McDunnough, is found an article on the hyponomeutid genus *Mieza* Walker, which needs some correction. Such is offered herewith from notes long in manuscript.

The authors have misunderstood the facts about the generic names *Eustixia* and *Eustixis* Hübner, when they surmise that the latter name is dropped because "not sufficiently characterized." Very few of Hübner's genera are sufficiently characterized from our present point of view, but they are not and cannot be dropped on that account. The authors state that otherwise the generic name *Mieza* Walker would fall as a synonym as before *Eustixis* Hübner, "which is sufficiently distinct from *Eustixia* to warrant its retention."

The facts are that the two names *Eustixia* and *Eustixis* were clearly intended by Hübner for but one genus and the different final letter is either a mere lapsus or an intended improvement in spelling. This is evi-

dent from their identical characterization: *Phalaena vera*, *lithosia geometriformis*, and even more so from Hübner's own statement in the preface to the next number of his "Zutrage," page 5, where he considers the specific name, *pupula*, of his second species as preoccupied by the first because in the same genus, changing it to *laeta*, and expressly stating that it can most properly be compared with the first *pupula*, which is the most nearly related species to it. To quote Hübner:

"Ich ergreife daher diese Gelegenheit einen solchen Missgriff zu verbessern, der sich im dritten Hundert, Seite 24, Nro. 245, Fig. 489, 490, findet. Dieser kleine Spinner nemlich, erhielt den Namen *Eustixis Pupula*, welchen jedoch schon eine im zweiten Hundert Seite 24, Nro. 164, Fig. 327, 328, abgebildete Phaläna führt, die am füglichsten mit der gegenwärtigen verglichen werden kann, und die nächste Vereins-Art zu derselben bildet. Ich habe nun statt des bereits verwendeten Namens, die hier nicht unpassende Benennung *Eustixis Laeta* gewählt, und bitte meine entomologischen Freunde und Besitzer dieser Zuträge, hievon gefällige Vormerkung zu nehmen."

Thus there can be no manner of doubt but that Hübner intended only one genus and that *Eustixis* is a true synonym of *Eustixia*, applicable to the monotype *pupula*, the well-known white, black-spotted Pyraustid.

Also, Walker's generic name, *Mieza*, is properly used for our present conception of the hyponomeutid genus, with *igninix* Walker as type.

However, it is obvious that Hübner's name *laeta* (= *pupula*) must be retained as earlier than any of Walker's names and it can only be applied to the species named *igninix* by Walker, with which, indeed, the figures agree very well.

M. crassivenella Zeller (not *crassinervella* Zeller) is also this same species, as Zeller's type in Cambridge proves.

Subfervens Walker and *psammitis* Zeller, as suggested by Barnes and McDunnough, may be mere varieties of the same species. Zeller regarded them as males and females of the same species, erroneously so, as both sexes are found in each of the two groups; eventually they may be proven to be but one variable species, but until such proof is at hand through breeding, the synonymy cannot be maintained, as the light marked form, agreeing with Walker's type of *subfervens*¹ and which Zeller

¹This is the one figured by Drs. Barnes and McDunnough on Plate IX, No. 13, and the same as figured by Stretch (Zyg. and Bom. N. Am., pl. 7, fig. 17), from a more clearly marked specimen.

erroneously accepted as the females of his species, is readily separated from the darker form, which agrees with Zeller's male type of *psammitis*.

Thus the North American species at present must stand as follows, which is the same as given in Bulletin 52, U. S. Nat. Mus., with the substitution of *laeta* for *igninix*.

1. *Mieza laeta* Hübner.
= *igninix* Walker.
= *crassivenella* Zeller.
2. *Mieza psammitis* Zeller.
3. *Mieza subfervens* Walker.
4. *Mieza basistriga* Barnes and McDunnough.
5. *Mieza atrolinea* Barnes and McDunnough.

The following new species may be added to the genus:

***Mieza spatula*, new species.**

Labial palpi black. Antennæ black. Face bluish black. Head dark brick-red. Collar light yellow. Thorax black. Fore wings black with two large, bold, light yellow, longitudinal streaks, one from base of the wing to termen, without, however, attaining the margin, covering the fold, the dorsal part of the cell and base of veins 2 and 3, the other from the middle of the cell reaches nearly to the terminal edge, attenuated toward its base and gradually broadening out to cover veins 5-8 except at their tip, the entire wing margin being black. Cilia black. Underside brick-red with black costal margin. Hind wing of a clear dark brick-red color above and below except the extreme costal edge, which is black. Abdomen black with genital brushes dirty yellow. Legs black with tuft on posterior tibiæ reddish.

Alar expanse, 20 mm.

Habitat, Mount Poas, Costa Rica, May, Wm. Schaus, collector; Cabima, Panama, May, August Busck, collector.

U. S. Nat. Mus. type No. 15804.

A very striking species, at once distinguished from other described species of the genus by the black ground color of the fore wings and the deep red color of the head and hind wings.

***Mieza citrina*, new species.**

Labial palpi light red with blackish tips. Face and head light brick-red; base of antennæ and the edges of the face yellow; antennæ dark

fuscous. Thorax light brick-red with a broad collar, the base of the patagia and two lateral spots yellow. Fore wings bright lemon yellow with reddish brown marking as follows: The entire edge narrowly reddish brown, a longitudinal streak from base along the upper edge of the cell to base of vein 10-11, a large round spot near inner angle and another larger, obliquely above and touching the longitudinal streak, an outwardly oblique streak from the middle of the dorsal edge to the end of the cell, where it turns at nearly right angles down to tornus; a large round dot above the apex of this angulated line at the middle of the cell. Cilia red. Hind wings pale brick-red. Undersides of both fore and hind wings pale brick-red, those of the fore wings with a golden lustre. Abdomen brick-red. Legs brick-red with dark brown tarsi.

Alar expanse, 23-27 mm.

Habitat, Juan Vinas, Costa Rica, February, Wm. Schaus, collector.

U. S. Nat. Mus. type No. 15805.

The clear yellow ground color of the fore wing at once separates this from any described species of the genus.

***Mieza irrorata*, new species.**

Labial palpi red. Antennæ dark brown. Head light ochreous. Thorax ochreous strongly mixed with dark purple. Fore wings with light yellow ground color but strongly and evenly overlaid with dark purple so as to obscure the yellow except below the fold where the dark scales are less dominating and on a large triangular dorsal spot at apical third which is nearly unmottled yellow; this yellow triangle is bordered by a reddish purple streak, oblique from the middle of the dorsum to the end of the cell, thence sharply deflected to tornus; this streak corresponds in position to the outer streak or row of dots in the allied species, while the inner row and the subcostal basal streak in these allied species are but very faintly represented in the present species by slightly darker blotches in the purple color. Hind wings and underside of both wings light brick-red. Abdomen brick-red with a lighter ochreous ventral streak. Legs red with light brown tarsal joints.

Alar expanse, 21 mm.

Habitat, Juan Vinas, Costa Rica, February, Wm. Schaus, collector.

U. S. Nat. Mus. type No. 15806.

Closely allied to *M. citrina*, from which it differs in the smaller size and dark scaled fore wings.

TRICHOCLEA RUISA NEW SPECIES: A STRUCTURALLY ABERRANT NOCTUID*(Lepidoptera, Noctuidæ)*

By WM. T. M. FORBES

The species described in this note, though an isolated specimen, is sufficiently peculiar in structure to make it unlikely that it has been previously described. It may be placed in the genus *Trichoclea*, since it does not contradict Hampson's diagnosis of the genus¹ in any essential way; but it is not closely related to the other species placed in it. All the nominal American species have been seen, but the species may possibly have been described as one of the few unrecognized Mamestræ or Taeniocampæ, in case the front and fore tibiæ were not examined.

Head prominent, the front with fine even vestiture, firmly attached; finely roughened and prominent, with a strong groove between it and the clypeus. Male antennæ slightly prismatic with short cilia, not at all serrate. Tongue normal, palpi moderate, closely upturned to the middle of the front, with short third joint and with normal rough vestiture. Pilifer normal and maxillary palpi obsolescent (like *Hadena*, etc.). Thorax with fine feathery vestiture of hair with broad flattened tips, forming slight anterior and posterior tufts. Abdomen with a strong basal tuft and a little loose hair on the following segments; moderate in size. Fore tarsus with much enlarged outer spinules, the terminal one on the first segment forming a claw, and the tarsus shortened somewhat. The legs otherwise normal, with moderately hairy tibiæ. Wings normal, fore wings triangular, with even outer margin and rounded extreme apex, the anal angle not strongly retracted. Hind wings normal, trifid, with M₂ (vein 5) a little low and somewhat stronger than in *Hadena*, but like other Mamestrids.

Head, thorax, and fore wing dull red-brown, not very dark. Tip of palpus infuscated; thorax and especially edge of collar frosted minutely with white. Fore wing smoothly colored, except for a fuscous shading of the reniform. Ordinary lines obscurely doubled, fuscous; t. a. moderately dentate, outward on fold, and inward on cell and anal, preceded by an obscure second line. T. p. somewhat lunulate, and followed by slight fuscous streaks on the veins, strongly convex on upper half, nearly straight but a little concave on lower half, and oblique, in general course

¹ Catalogue of the Lepidoptera Phalaenæ in the British Museum, v. 236, 1905.

parallel to outer margin, followed by an obscure second line, especially at inner margin. St. line obscure, fringe fuscous. Orbicular obsolescent, round, reniform large, normal in form and dark-filled; cl. represented by a slight thickening of the t. a. line. A contrasting white spot, which is round except for a notch on its basal side at the lower angle of the cell, covering the outer lower portion of the reniform. Hind wing dirty white, with fuscous veins, and outer third infuscated, abdomen fuscous with considerably brighter terminal tuft. Under side reddish gray, the disc of fore wing and body infuscated, and hind wing except costal part whitish, with a fuscous discal bar and postmedial line parallel to the outer margin on both wings. Expanse (fully spread), about $1\frac{1}{4}$ inches (30 mm.). One male from Tryon, N. C., in the U. S. National Museum, collected by Fiske, August 10, 1904.

Type, No. 15780, U. S. Nat. Mus.

A NOTE ON TALARA RUFICOLLIS SCHAUS

(*Lepidoptera, Lithosiidae*)

By HARRISON G. DYAR

Talara ruficollis Schaus (Journ. N. Y. Ent. Soc., iv, 149, 1896) was placed by Hampson in *Illice* (Cat. Lep. Phal. Brit. Mus., ii, 373, 1900). An examination of the ♀ type from São Paulo, S. E. Brazil, shows that in reality vein 5 of hind wing is absent. The species falls by Hampson's table into *Hypoprepia*, from which it differs in vein 11 of fore wing being straight and oblique, not curved and approximated to 12. The new name **Paraprepia** is therefore proposed, type *Paraprepia ruficollis* Schaus.

There is another ♀ of this species in the collection from Castro, Parana, Brazil. Associated with these females was also a male, labeled *Talara ruficollis* Schaus; but it differs in venation, falling by Hampson's table to *Illice*, except that the palpi are not upturned, but obliquely ascending. It will form a new genus, falling with *Miltochrista*, but differing in having vein 11 straight and oblique. It may be named

Parillice deceptans, new genus and species.

Coloration of *Paraprepia ruficollis* Schaus, except that the posterior half of vertex of head is orange as well as the tegulae. The neck and basal joint of palpi are orange in both. Expanse, 19 mm.

Type, ♂, No. 15779, U. S. Nat. Mus.; Castro, Parana, Brazil (Schaus collection).

THREE NEW NEOTROPICAL MOSQUITOES

By HARRISON G. DYAR and FREDERICK KNAB

Sabethes chroiopus, new species.

Male: Proboscis moderate, distinctly swollen toward apex, clothed with violaceous scales. Palpi short, violet-black scaled. Clypeus prominent, subtriangular, flattened, luteous, with silvery white pubescence along margins. Antennæ slender, filiform, the last two joints somewhat longer, the others subequal, with basal whorls of very long, rather sparse hairs and median whorls of very short hairs; tori black, nude. Occiput clothed with dark metallic violet and blue scales.

Prothoracic lobes large and collar-like, clothed with dark metallic blue scales with green and violaceous reflections. Mesonotum and scutellum clothed with metallic scales, changing from blue to green and bronze in different lights. Postnotum piceous, with a distinct median lobe, with several coarse black bristles posteriorly; without scales.

Abdomen long and slender, broadest at base and apex; dorsal vestiture dark metallic blue with iridescent reflections, venter pale golden scaled, the colors separated on the sides in a nearly straight line; apex with dorsal and lateral tufts of coarse black bristles; lateral ciliation short and very fine, rather sparse, pale.

Wings hyaline, narrow; second marginal cell much more than twice the length of its petiole, anterior and posterior cross-veins very nearly incident; scales moderately broad, subtruncate.

Legs long and slender, dark metallic violet scaled, the middle pair only with paddle-shaped scale-tufts; paddles involving the outer half of tibia and all of first tarsal joint, showing a slight indentation at tibio-tarsal articulation; scales of paddles mostly black, a white apical patch on anterior side of tibia, a subapical white patch on anterior side of first tarsal and an apical white patch on its posterior side. Claws simple and equal on front and hind legs, unequal on mid pair, with one of them modified.

Length: Body about 5.5 mm.; wing, 4 mm.

Potaro Highlands, British Guiana, May, 1909 (de Freitas, through W. H. B. Moore).

Type: Cat. No. 15999, U. S. Nat. Mus.

Most nearly related to *Sabethes bipartipes* D. and K., but differing in the disposition of the white on the scale-paddles of the middle legs.

Aedes ioliota, new species.

Female: Proboscis rather long and slender, uniform, black scaled throughout. Palpi short, black scaled, the apices silver-white scaled. Antennæ filiform, the joints subequal, with basal whorls of sparse, rather long hairs; tori dark brown. Occiput clothed with black lanceolate scales, a median stripe of narrow curved yellowish silver scales; margins of eyes and a broad sublateral stripe as well as the cheeks yellowish silver scaled; some upright forked black scales well back on the nape.

Prothoracic lobes remote dorsally, with a patch of flat bright silvery scales. Mesonotum rich brown, clothed with minute curved deep brown scales and with lines of larger silvery and pale golden scales disposed as follows: A pair of submedian pale golden lines extending from near anterior margin to posterior third, followed by a silvery median line extending over antescutellar space; a golden line at either side of antescutellar space, extending forward from base to near middle of disc; a submarginal silver line extending from root of wing forward over anterior angles; a small silver spot medianly at anterior margin. Scutellum with a patch of black scales on mid lobe, divided by a stripe of silver scales which are followed by a tuft of pale yellow hairs; lateral lobes with some silvery scales in continuation of the stripes on mesonotum. Postnotum brown, nude. Pleuræ brownish luteous with some small patches of silver scales.

Abdomen subcylindrical, segments 5, 6, and 7 apically expanded beneath; dorsal vestiture black, a series of large, segmental, lateral patches of silver scales, segments 3 to 6 with a small, indistinct, yellowish, median basal spot, the seventh segment with a small silver median basal spot; venter silver scaled with apical segmental black bands.

Wings rather narrow, hyaline; scales along the veins dark brown, those on the costa blackish; outstanding scales narrowly ligulate.

Legs rather long, slender; vestiture black and white; knees silvery white; front tarsi with the first two joints narrowly ringed with white at bases; middle tarsi with the first three joints narrowly white-ringed at bases; hind tarsi with the first three joints broadly white-ringed at bases, the fourth entirely black, the fifth entirely white. Claw formula 0.0-0.0-0.0.

Length: Body, about 4 mm.; wing, 3.5 mm.

Trinidad, West Indies (F. W. Urich).

Type: Cat. No. 16000, U. S. Nat. Mus.

Four females bred from larvæ in water in a hollow tree. The species resembles, in most respects, *Aedes albonotata* Coquillett, from Santo

Domingo. It differs notably in the marking of the hind tarsi. In *albonotata* the last two tarsals are black and the white rings on the other joints are progressively broader, which is not the case in the present form.

***Uranotænia hystera*, new species.**

Male: Proboscis rather long, distinctly swollen at tip, brownish-black scaled. Palpi very short, blackish. Clypeus small, broad, subtriangular, dark brown. Antennæ filiform, the joints subequal, coarsely ciliate, with basal whorls of short and sparse hairs; tori large, dark brown. Occiput clothed with broad, flat, pale scales, a few suberect narrower white ones on the vertex.

Mesonotum rich brown on the disc, the sides narrowly, the anterior angles and front margin broadly pale yellowish; scales on disc sparse, hair-like, black, a short line of broad white scales before roots of wings, anterior angles and front margin with yellowish-white narrow curved scales; bristles coarse and long, black. Scutellum brown, clothed with dark brown, rather broad, subtruncate scales, some similar scales at sides of antescutellar space. Postnotum dusky brown, pale at the sides, with a fine median ridge. Pleuræ and coxæ pale yellowish.

Abdomen depressed, parallel-sided, blunt at the tip; dorsal vestiture dull black, the segments beyond the first with apical yellowish-white bands which are narrowed laterally and abbreviated on some of the segments; venter pale scaled with indistinct basal segmental bands.

Wings broad, hyaline; second marginal cell about one-third the length of its petiole; second posterior cell shorter than its petiole; posterior cross-vein more than its own length from anterior cross-vein; scales of the veins dull brown, those on the costa nearly black, the large lanceolate outstanding scales on the third and fourth veins pale; a short line of bluish-white scales at base of fourth and continued on fifth vein over basal fourth.

Legs moderately long, rather slender; vestiture uniformly dark brown with a bronzy luster. Claws minute, simple.

Length: Body, about 2 mm.; wing, 2 mm.

Manoa, Orinoco River, Venezuela, January, 1910 (Dr. F. L. de Verteuil).

Type: Cat. No. 16001, U. S. Nat. Mus.

Resembles *Anisocheleomyia leucoptera* Theobald, founded on a single male from British Guiana, but apparently distinct.

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Vol. I

JULY, 1913

No. 7

THE SPECIES OF CALYPTOCOME WARREN

(*Lepidoptera, Geometridæ*)

By HARRISON G. DYAR

The genus *Calyptocome* was founded by Warren (Nov. Zool., vii, 148, 1900) for *pannaria* Guenée as type. A considerable material is before me of species allied to *pannaria*, amassed by Mr. Wm. Schaus in his collection, now in the National Museum. It seems worth while to sort them out, as they are somewhat confused. Mr. Schaus has identified the material, especially that recently collected by himself in Costa Rica, and with the assistance of Mr. Wm. Warren in regard to the material in the older part of the collection. In spite of Mr. Schaus's usual care and conscientious comparisons a number of errors have crept in, and some species have been united which appear to me distinct. The standing of the genus *Calyptocome* will, no doubt, be made clear by Prout in his treatment of the Acidaliinæ now in the press of the Genera Insectorum; but it is not probable that he will especially differentiate the species here mentioned, on account of the object and scope of the Genera Insectorum. I have used *Calyptocome* here for the species allied to *pannaria* only, and have stopped including species whose general appearance became too diverse, even where the general structure has not changed.

Of the species occurring in the United States, *pannaria* is found in our fauna as far north as North Carolina, and is recorded from New Jersey (Smith's Rept. Ins. N. J., 1909, p. 498), evidently having reached us by way of the mainland. Another species, *purpurascens* Hulst, occurs in southern Florida, derived from the Antillean fauna; a third from Florida, *rubrotincta* Hulst, may be a suffused form of *purpurascens*. A

fourth species has been taken in Alabama and Mississippi, namely, *purpurissata* Grote, and is the only species associated with a food plant, one of the Leguminosæ.

The species of which males are before me separate as follows:

TABLE OF SPECIES OF CALYPTOCOME

Hind wing with the margin evenly rounded.

Hind wing of ♂ below with suberect ocher scales over surface except margin; large; dark purplish above, the lines appearing pale, broken.

concoloraria Dognin

Hind wing of ♂ below with basal third covered broadly with raised yellow scales.

Pale carneous purplish, lines mixed with dark scales, appearing darker than the ground.

Larger; purplish; lines generally continuous . . . *exanimaria* Dyar

Smaller; scarcely purplish; lines generally broken.

Costal and terminal edges not conspicuously darker than the lines; mesial line not strongly developed into a spot.

fragmentata Warren

Costal and terminal edges darker than the lines, which are slender and obsolescent; an irregular, incomplete, but distinct patch formed out of the mesial line on discal nervules.

terminata Guenée

Darker purplish; lines metallic ocher with dark edges.

Lines dark-edged or dark, median and outer generally strongly excurved below, median generally darker, more contrasted than the others.

pannaria Guenée

Lines scarcely darker edged, little excurved below, the median not more contrasted than the others *pappasaria* Dyar

Dark purplish; lines with only a few dark scales, appearing ocher, contrasted, somewhat broken or segmented *phryctaria* Dyar

Hind wing of ♂ below with an oval patch of raised scales on submedian fold near base.

Color pale carneous purplish; dark edges of lines contrasted . . *hegeter* Dyar

Darker purplish; lines metallic ocher, the dark edges inconspicuous.

Fore wing with the outer margin nearly straight, apex appearing pointed; beneath without rosy tint *rectimargo* Dyar

Fore wing with outer margin convex, apex appearing blunt; fore wing below rosy shaded *ptyctographa* Dyar

Dark purple or purple-red; lines pale, fragmentary.

Outer margin of fore wing evenly rounded, apex appearing square.

Beneath strongly shaded with dark rosy; hind wing in ♂ all red shaded *subrubella* Warren

Beneath lighter rosy shaded; hind wing of ♂ largely pale.

Larger; pale costal edge shaded; marks slender, broken, obsolescent *purpurata* Warren

Smaller; pale costal edge sharply marked and contrasted;
 marks distinct, though fragmentary . . . *penthemaria* Dyar
 Outer margin slightly concave above vein 3; apex appearing subfalcate.

amechana Dyar

Ocher yellow and red, only partly or not at all shaded with purplish.

Marks yellow, separated by red; margin more or less purple shaded;
 no metallic scales *ignifera* Warren

Marks slender and dentate; ground finely dusted with metallic scales;
 color varying from traces only to heavy purplish shading.

Marks suffused, the lines obsolete, shaded with purple strongest at
 base and termen *rubrotincta* Hulst

Marks strongly contrasted, coarse; base of wings contrastingly dark.
purpurascens Hulst

Marks finer, not so contrasted; base of wing pale, gradually dark-
 ening outwardly *variabilis* Dyar

Hind wing of ♂ below without areas of raised scales.

Pale carneous roseate in ground color *carnearia* Dyar

Darker purplish.

Lines subcontinuous, generally all complete across wing . *rivularia* Dyar

Lines subsegmented, generally mostly all broken, especially through cen-
 ter of wing *desmogramma* Dyar

Red and yellow, the lines rather broad and appearing red on a yellow ground.
conversa Warren

Hind wing with the margin produced centrally, roundedly angled.

Both wings of ♂ below with raised purple-black scales from base to beyond middle.
catagompha Dyar

Basal half of hind wing only with long dark scales, sharply limited.

gerocoma Dyar

Calyptocome concoloraria Dognin.

Acidalia concoloraria Dognin, Le Nat., (2), iv, 10, 1890.

Acidalia concoloraria Dognin, Lep. de Loja, ii, 63, 1891.

This large, darkly colored species is characteristic. The collection possesses an authentic male from Loja, Ecuador, given by Mr. Paul Dognin, a female from La Chorrera, Panama, May, 1912 (A. Busck), and a second female from La Florida, Costa Rica, March, 1907 (W. Schaus).

Calyptocome exanimaria, new species.

Very pale carneous purplish; costal edge and narrow terminal line on both wings purple-red; lines obsolete, their dark edges present, conspicuous, forming irregular wavy powdery lines. Beneath whitish, without rosy tint, the ♂ with a large patch of rough ocher scales covering basal third of hind wing. Expanse, 16 mm.

Cotypes, ♂ and ♀, No. 15656, U. S. Nat. Mus.; Matanzas and Santiago, Cuba, June, 1903 (W. Schaus).

Calyplocome fragmentaria Warren.

Calyplocome fragmentaria Warren, Nov. Zool., xi, 32, 1904.

Described from Bartica, British Guiana. I have three from St. Jean, Maroni River, French Guiana, and a single ♀ from Grenada, B. W. I., in poor condition, but appearing nearer to *fragmentaria* than *exanimaria*.

Calyplocome terminata Guenée.

Acidalia terminata Guenée, Spec. Gen., ix, 483, 1857.

Described from Colombia. I have two from Panama (Porto Bello and Corozal, Canal Zone) and four from Costa Rica (Avangarez, Juan Vinas, and Guapiles).

Calyplocome pannaria Guenée.

Acidalia pannaria Guenée, Spec. Gen., ix, 470, 1857.

Acidalia tremularia Walker, Cat. Brit. Mus., xxvi, 1614, 1862.

Cryptityla borrigaria Warren, Proc. U. S. Nat. Mus., xxx, 436, 1906.

I am not certain of the synonymy of *tremularia* Walker, given above, but follow Hulst, as I have no better suggestion to make. *C. pannaria* is before me from Costa Rica (Juan Vinas, San José, Cachi, Tuis, and Cartago), Mexico (Orizaba, Jalapa, and Guadalajara), and the United States (Texas, Florida, and North Carolina). See remark under *turbata* Walker, below.

Calyplocome pappasaria, new species.

Close to *pannaria*; smaller; smooth light purplish gray, the lines fine, wavy, without prominent dark edges, uniform. An insular species, representing the continental *pannaria*. Expanse, 14–15 mm.

Cotypes, 10 specimens, both sexes, No. 15657, U. S. Nat. Mus.; Santiago, Cuba, June and July, 1903 (W. Schaus).

Calyplocome phryctaria, new species.

Close to *pannaria*; darker purplish, the lines yellow, broad, coarsely crenulate, without distinct dark borders. Beneath pale, silky, fore wing rosy toward costa. Expanse, 17–18 mm.

Cotypes, ♂ and ♀, No. 15658, U. S. Nat. Mus.; Sierra de Guerrero, Mexico, October, 1911 (R. Müller); Orizaba, Mexico, June, 1911 (R. Müller).

Calyptocome hegeter, new species.

Pale purplish carneous, much the color of *exanimaria*. Wings more trigonate, outer margin straighter than in the *pannaria* allies. Lines reduced, inconspicuous, but with distinct dark edges; a dark purplish terminal line and line on costa. Beneath whitish, silky, fore wing roseate along costa. Expanse, 16–18 mm.

Cotypes, 2 ♂, 3 ♀, No. 15659, U. S. Nat. Mus.; Esperanza, Costa Rica, May, 1907 (W. Schaus); Banana River, Costa Rica, May, 1907 (W. Schaus); St. Jean, Maroni River, French Guiana (W. Schaus).

Mr. Schaus has labeled the Esperanza specimens "*concoloraria* Dogn.," but they differ rather conspicuously from that in my opinion. The Guiana specimens were not labeled, but were contained in a long series standing over the label *turbata* Walker.

Calyptocome rectimargo, new species.

Of a medium colored purplish, much as in *pannaria*, but the ♂ hind wing below with only the small patch of androconia on submedian fold. Lines yellowish, broad, coarsely waved, without distinct dark edges. Wings more trigonate than usual, the outer margin nearly straight. Expanse, 17 mm.

Type, ♂, No. 15660, U. S. Nat. Mus.; Aroa, Venezuela (Schaus collection).

Calyptocome ptyctographa, new species.

Smaller than the preceding and with normally rounded wings. Purplish ground color a little darker. Lines yellow, rather broad and distinct, without contrasting dark edges, but well relieved by the ground color, coarsely crenulate. Beneath pale, costa of fore wing rosy tinged. Expanse, 14–15 mm.

Cotypes, 1 ♂, 3 ♀, No. 15661, U. S. Nat. Mus.; Taboga Island, Panama, June, 1911 (A. Busck); Banana River, Costa Rica, March 1907 (W. Schaus).

One of Mr. Schaus's specimens is labeled "*concoloraria* Dogn.," but I can not give so wide an interpretation to that species.

Calyptocome subrubella Warren.

Crypsityla subrubella Warren, Proc. U. S. Nat. Mus., xxx, 437, 1906.

Besides the type, there are 15 specimens before me from French Guiana, two from Panama (Corozal, Canal Zone), and one from Costa Rica

(Laguna). Females are not as much shaded beneath with purple-red as males. The three from Panama and Costa Rica are darker purple above than the true *subrubella*, probably forming a local race. Mr. Schaus labeled the ♀ from Costa Rica "*subrosea* Warr.," but it agrees better with this.

***Calyplocome amechana*, new species.**

Fore wing with a slight angulation in middle of outer margin, the part above slightly emarginate. Hind wing evenly rounded. Dark purplish, the lines slight and without pronounced borders. Expanse, 18 mm.

Type, ♂, No. 15663, U. S. Nat. Mus.; Orizaba, Mexico (Schaus collection).

The type is badly rubbed, but the species is readily recognizable by the wing shape and ♂ secondary character. A ♀ from Orizaba has been associated with the type, having a similar wing-shape. It is, however, redder, and shows more rosy tint beneath.

***Calyplocome ignifera* Warren.**

Crypsityla ignifera Warren, Proc. U. S. Nat. Mus., xxx, 436, 1906.

Warren described from 3 ♂ and 1 ♀, but only two specimens bear his label in the collection. The series from the Guianas comprises 18 specimens, including the types. There are also 15 specimens from Panama (Corozal, Canal Zone, La Chorrera, and Cabima). Most of the Panama specimens show more grayish shading submarginally, mesially, and basally than the Guiana ones, but the difference is not constant.

***Calyplocome purpurascens* Hulst.**

Eois purpurascens Hulst, Can. Ent., xxxii, 105, 1900.

Eois purpurascens Hulst, Bull. 52, U. S. Nat. Mus., 296, No. 3522, 1903.

Close to *variabilis* Dyar, but larger and brighter, apparently specifically separable, though evidently derived from an Antillean form. See *phorcaria* Guenée, following. Besides the type, the collection possesses six specimens from Cocoanut Grove and four from Miami, Florida.

***Calyplocome rubrotincta* Hulst.**

Wauchula rubrotincta Hulst, Journ. N. Y. Ent. Soc., viii, 216, 1901.

I have only the single ♂ type from Florida. It may be a suffused specimen of *purpurascens* Hulst.

Calyptocome variabilis, new species.

Wings purple, with red underground and minute metallic atoms, or partly, or wholly without the purple shading, being then red or pale lilac-red; costa broadly dull ocher to outer line, this color crossing collar; lines very slender, wavy, pale ocher, without bordering shades, the inner line, discal dash, and median line forming projections on the costal border. Beneath, pale straw color, wings washed with rosy along the margins. Expanse, 13–17 mm.

Cotypes, 16 specimens, No. 15664, U. S. Nat. Mus.; Santiago, Cuba, June, July, and October, 1903 (W. Schaus).

Calyptocome carnearia, new species.

Pale carneous purplish; costa with a yellow shade to outer line within the dark costal edge; lines yellow, wavy, but slightly so and comparatively straight; inner, discal dash, median, outer and even part of submarginal clearly visible, edged within by a rosy shade. Beneath, whitish silky, fore wing tinged with rosy about edges. Expanse, 17 mm.

Type, ♂, No. 15665, U. S. Nat. Mus.; Jamaica (Schaus collection).

Calyptocome rivularia, new species.

Rather dark purplish, with subcostal ocher fascia; lines broad, coarsely wavy, continuous, without dark edges. Beneath, whitish, silky, fore wing broadly rosy in costal region. Expanse, 14–16 mm.

Cotypes, 11 specimens, No. 15666, U. S. Nat. Mus.; Corozal, Canal Zone, Panama, July, 1912 (J. Zetek and C. P. Crafts); Cabima, Panama, May, 1911 (A. Busck).

Calyptocome desmogramma, new species.

A little darker purplish than the preceding; slightly larger, the lines tending to be broken into short segments, at least in part, but broad and distinct. Expanse, 15–18 mm.

Cotypes, 37 specimens, No. 15667, U. S. Nat. Mus.; St. Jean, Maroni River, and Cayenne, French Guiana (W. Schaus); Geldersland, Surinam River, Dutch Guiana (W. Schaus).

***Calyptocome conversa* Warren.**

Calyptocome conversa Warren, Nov. Zool., xi, 32, 1904.

Described from Bartica, British Guiana. I have 21 from French and Dutch Guiana, taken by Mr. Schaus, and a single ♂ from Rio Janeiro,

Brazil, labeled by Mr. Warren. This species is very close to, if not the same as *Haemalea porphyrinata* Walker, and I leave it in this group in deference to Warren's action, though with doubt. The structure is normal for *Calyptocome*, but the markings lead to *Haemalea* of similar structure, and to include all the forms led up to by *conversa* would extend the present paper beyond the limits contemplated.

Calyptocome catagompha, new species.

Large, dark purple; hind wing with prominent rounded angle in outer margin; fore wing with subcostal dull luteous vitta; lines slender, broken, fragmentary, luteous, without dark edges. Beneath, wings purple, a broad area of long black scales with metallic reflection extending from base of both wings to beyond middle. Expanse, 19 mm.

Type, ♂, No. 15668, U. S. Nat. Mus.; Porto Bello, Panama, April, 1912 (A. Busck).

Calyptocome gerocoma, new species.

Like the preceding; smaller, not so dark purplish, the lines broader and continuous, wavy. Beneath pale with little purple tint; hind wing only with area of long brown scales, limited sharply near middle of wing. Expanse, 15 mm.

Type, ♂, No. 15669, U. S. Nat. Mus.; St. Jean, Maroni River, French Guiana, July, 1904 (W. Schaus).

Of the following species I possess no male, and have omitted their names from the table at the beginning of this article.

Calyptocome phorcaria Guenée.

Acidalia phorcaria Guenée, Spec. Gen., ix, 470, 1857.

Hyria concessata Walker, Cat. Brit. Mus., xxii, 659, 1861.

Allied to *purpurascens* Hulst and *variabilis* Dyar, with the metallic reflection to part of the purple scales. The specimens are duller in tone than *purpurascens*, but possess the same tendency to darker basal and terminal areas, though in a less degree. There is also some variation in the ground color. The species really stands between the two. It is from Jamaica.

Calyptocome subrosea Warren.

Crypsityla subrosea Warren, Nov. Zool., xii, 321, 1905.

A single ♀ from Brazil is before me, labeled by Warren. The wings

are heavily shaded with purple red, giving the appearance of suffused red bands on a yellowish ground, on the style of *conversa* Warren, to which this may be allied.

Calyptracome turbata Walker.

Cambogia turbata Walker, Cat. Brit. Mus., xxvi, 1755, 1862.

Crypsityla turbata Warren (in part), Proc. U. S. Nat. Mus., xxx, 437, 1906.

Very close to *pannaria* Guenée, perhaps only a local form of it with rather darker ground color. Having no ♂, I do not know whether the secondary sexual characters are identical. Described from Brazil, from whence I have three specimens, all females.

Calyptracome purpurissata Grote.

Acidalia purpurissata Grote, Can. Ent., iii, 103, 1871.

Described from Alabama. Placed as a synonym of *pannaria* by Hulst, but certainly distinct. I have a single ♀ from Bryam, Mississippi, bred on cowpeas by W. R. McConnell. It looks most like the Costa Rican form of *subrubella* Warren, but the lines are more continuous and straighter. The receipt of a ♂ is much desired.

Calyptracome roseoliva Warren.

Calyptracome roseoliva, Nov. Zool., vii, 148, 1900.

This species is unknown to me except by description. Apparently it is near to *carnearia* Dyar from Jamaica. It was described from St. Vincent.

Cinglis inornata Warren.

Calyptracome inornata Warren, Nov. Zool., xi, 33, 1904.

This species does not fall in *Calyptracome*, having subpectinate antennæ in ♂, one reduced spur on hind tibiæ, tarsal joints all present and two accessory cells in fore wing. It agrees with *Cinglis* by Meyrick's definition (Proc. Ent. Soc. Lond., 90, 1892), though it has not the appearance of the European species that he makes the type of *Cinglis*. It looks more like some North American species which Hulst placed in that genus.

In 1904 (Nov. Zool., vii) Mr. Warren placed the species here considered in his genus *Calyptracome*; but in 1906 (Proc. U. S. Nat. Mus., xxx) he places them in *Crypsityla*, another of his own genera (Nov. Zool., vii, 152, 1900) of the same date with *Calyptracome* but later by pagination. I think this is due to a confusion of names on Mr. Warren's part and not an intentional change of genus.

NEW MICROLEPIDOPTERA FROM BRITISH GUIANA

By AUGUST BUSCK

A collection of Lepidoptera recently received for determination from Mr. H. W. B. Moore, of British Guiana, contained the following Micros. All of these are of particular interest because their life-histories and food-plants were ascertained by Mr. Moore, who will eventually publish more detailed notes thereon.

Arauzona moorei, new species.

The very long and slender labial palpi with basal part of second joint whitish ochreous, upper part blackish brown; terminal joint blackish brown. Antennæ dark metallic blue with a broad silvery white band at apical third; base of antennæ thickened with scales and strongly ciliated until the white band. Face and head dark metallic blue; a narrow golden yellow collar. Thorax blackish blue, streaked laterally with ochreous; patagia golden ochreous. Forewings black with a golden ochreous longitudinal subcostal streak from base to apical third and on the middle of the wing an adjoining broad transverse ochreous band with poorly defined edges and not reaching the extreme dorsal edge. Hindwings black with silvery white costal edge and costal cilia and with unscaled transparent area covering the entire dorsal part of the wing below the cell, with but the veins and the dorsal edge narrowly black. Abdomen black above with the posterior edge of first and third joints golden. Entire underside of body and basal half of the legs silvery white; tarsi and end of tibiæ dark blue. Alar expanse: 14 mm.

Habitat: Craig, British Guiana.

Food plant: *Pisonia inermis*.

U. S. Nat. Mus. type No. 16011.

"Larva feeds on the tender leaves, making a dense, elongate, white web, which greatly resembles the nests of some of the Attid spiders."—Moore.

Dichomeris servilis Walsingham.

Two specimens of this species were bred by Mr. Moore at the Botanical Gardens, British Guiana. The species was originally described from Panama (Biol. Cent.-Am., Lep. Het., iv, p. 103, pl. 3, fig. 25, 1912).

Food plant: *Ipomoea fastigiata*.

Dichomeris varronia, new species.

Second joint of labial palpi with medium, blunt, compressed tuft, blackish, dusted with gray near the tip on the outer side, dusky brown on the inner side; terminal joint reddish with black apex. Face and head blackish fuscous, with brown side tufts. Thorax blackish with brown patagia. Forewing dark blackish fuscous with a light ochreous brown costal area from base to apical fifth, broadest near base, where it occupies fully half of the width of the wing and attenuated toward apex. This light area is edged on its basal half by a deep blackish brown area, which is gradually suffused into the ground color dorsally, but which toward the costal light area is sharply drawn as an undulating edge; around the apical and terminal edge is a submarginal series of small ochreous dashes. Cilia blackish fuscous. Hindwing dark brownish fuscous, lighter toward the base. Abdomen dark fuscous above, underside ochreous brown. Legs ochreous brown with dusky tarsi. The males have a curious long tuft of light ochreous hair on each side of the thorax just below the patagia. Alar expanse: 19 mm.

Habitat: Kitty, British Guiana.

Food plant: *Varronia curissavaca*, black sage.

U. S. Nat. Mus. type No. 16012.

This species occurs also in Panama, where the writer has collected it at Corozal and La Chorrera.

Nearest to *D. arotrosema* Wlsm., described from Vera Cruz, Mexico; with nearly the same pattern but smaller and lighter and more brownish in color.

Cryptolechia flava Zeller.

Two specimens of this species were bred by Mr. Moore at Mocha, British Guiana, from coffee.

Blastobasis lecaniella, new species.

Labial palpi white, mottled with dark brown, especially on terminal joint. Antennæ ochreous white with heavy white pecten on basal joint. Face white. Head and thorax white, mottled with light ochreous brown. Forewing white, irregularly mottled with ashy brown, especially toward the tip; an indistinct brown discal spot on the middle of the cell and two small brown dots at the end of the cell. Cilia dusky. Hindwings light

ochreous fuscous. Abdomen light fuscous. Legs whitish ochreous with indistinct brown tarsal annulations. Alar expanse: 11 mm.

Habitat: Nonpareil, British Guiana.

Larva feeds on *Lecanium* and *Ceroplastes* on old roots of lime and guava.

U. S. Nat. Mus. type No. 16013.

Stenoma peronia, new species.

Labial palpi whitish on the inner side, brown exteriorly. Face reddish white. Head light brown. Thorax light bluish drab; patagia light brown. Forewings with costal edge slightly arched at basal third and depressed at apical third, apex rounded, termen nearly perpendicular; light bluish drab with a large brown costal spot extending from base to beyond basal third and with another large brown oval costal spot at apical third reaching nearly to the tip of the wing; a submarginal row of black dots along the terminal edge and around apex; a less pronounced row of small black dots parallel with the submarginal row at apical third and a few scattered black dots at the end of the cell. Cilia dark brown. Hindwings whitish fuscous. Legs whitish with dusky tarsal joints. Alar expanse: 16 mm.

Habitat: Belair, British Guiana.

Food plant: Birdvine, *Losanthus* sp.

U. S. Nat. Mus. type No. 16014.

Stenoma speratum Busck.

One specimen from Craig, British Guiana, bred from *Inga* sp. by Mr. Moore. The species was originally described from French Guiana (Proc. U. S. Nat. Mus., vol. 40, p. 219, pl. 9, fig. 31, 1911).

Stenoma griseana Fabricius.

The larva of this well-known, widely distributed *Stenoma* was found and reared by Mr. Moore on *Guarea trichilioides*.

Gracilaria violacella Clemens (?).

Two specimens of *Gracilaria*, bred by Mr. Moore from "pigeon pea" in Georgetown, British Guiana, cannot be differentiated from our North American *Desmodium* species.

Imma rugosella, new species.

First and second joint of labial palpi white, second with a dark brown

annulation before the tip; terminal joint with base broadly dark brown, tip yellowish. Face yellowish white. Head light ochreous. Thorax ochreous with a narrow blackish brown transverse line across the middle. Patagia with a black line across their bases. Forewings light ochreous brown; costa yellowish with a small black dot at basal third and a larger on the middle; a subcostal, black, interrupted longitudinal streak edged dorsally by a yellow longitudinal line; ill-defined groups of black dots at apical third of costa and at the end of the cell; a series of black dots around apical and terminal margin, edged with yellow; cilia with alternating yellow and black tufts. Hindwings dark brown. Abdomen brown above. Underside of body silvery white. Legs white with broad bars of blackish brown on tibiae and tarsi. Alar expanse: 17 mm.

Habitat: Kitty, British Guiana.

Food plant: *Securidica*.

U. S. Nat. Mus. type No. 16015.

***Eucosma tetropsis*, new species.**

Second joint of labial palpi light ochreous with two transverse dark brown bars, a heavy one near base and a narrow one near the tip, apex of second joint and terminal joint dark brown. Head and thorax dark brown. Forewings in the male with well developed costal fold reaching to the middle of the wing and with a series of tufts of raised scales on the fold; greenish ochreous mottled with dark brown; a series of equidistant dark brown streaklets on costa from base to apex with their intervals silvery violet; the tufts on the fold silvery violet; a thin, silvery, metallic, zigzag line runs from apex along the terminal edge to tornus, thence obliquely upward to the end of the cell and again downward to the tufts on the fold. Cilia light greenish brown with heavy tufts of black in the upper half. Hindwings dark greenish fuscous with costal edge silvery. Abdomen dark brown with anal tuft and underside lighter. Legs blackish brown with inner side and joints ochreous. Alar expanse: 13 mm.

Habitat: Kitty, British Guiana.

Foodplant: Guava, feeding on the tender shoots.

U. S. Nat. Mus. type No. 16016.

This species I should formerly have placed in the genus *Crociosema*, but late studies have convinced me that the supposed characters of this genus, notably the position of veins 6 and 7 in the hindwing, do not hold good and that the genus cannot be maintained apart from *Eucosma* Hübner.

Olethreutes mochana, new species.

Labial palpi light reddish ochreous with the terminal joint and the tuft on second joint touched with aniline red. Antennæ reddish fuscous. Face, head, and thorax light ochreous strongly mottled with reddish and purplish brown. Forewings with the reddish ochreous ground color strongly mottled by many transverse striations of purplish and black; costal edge with a series of black dashes, alternately a large and a minute one, and with the intervals ochreous; arising from the intervals on the outer half are narrow, metallic, lead colored outwardly curved lines; parallel with the terminal edge is a perpendicular silvery streak preceded by four or five blackish dots on ochreous ground. Hindwings dark fuscous. Abdomen dark fuscous with silvery underside. Legs light fuscous with black tarsal annulations. Alar expanse: 12 mm.

Habitat: Mocha, British Guiana.

Food plant: *Vochysia guianensis*.

U. S. Nat. Mus. type No. 16017.

Olethreutes guiana, new species.

Labial palpi reddish ochreous, whitish on the underside. Antennæ light ochreous with dusky tips. Head reddish ochreous. Thorax ochreous mottled with brown. Forewings light brown much mottled by transverse striations of dark brown ochreous and metallic blue; costal edge dark brown with three pairs of light ochreous, outwardly curved streaklets, first pair at basal third, second pair beyond the middle, and third pair at apical fifth; from the center of each of these ochreous streaklets originates a bluish metallic line, of which the first two subdivide and run in irregular zigzag course across the wing, while the last four are directed outward and unite on the terminal edge below apex; a perpendicular silvery line at tornus is edged with blue and preceded by three or four small black dashes; cilia ochreous brown, upper half with a basal blue metallic line. Hindwing dark brownish fuscous. Abdomen dark fuscous above; entire body light straw colored on the underside. Legs light ochreous with blackish tarsal annulations. Alar expanse: 11-12 mm.

Habitat: Georgetown, British Guiana.

Larvæ feed on a common weed in the cane field.

U. S. Nat. Mus. type No. 16018.

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Insecutor Inscitiae Menstruus

Vol. I

AUGUST, 1913

No. 8

A NEW SPECIES OF RHODITES FROM CALIFORNIA

(*Hymenoptera, Cynipidæ*)

By WILLIAM BEUTENMÜLLER

Rhodites weldi, new species.

Male. Head black, front rugoso-punctate, somewhat shining and hirsute. Antennæ black, 14-jointed. Thorax black, shining, punctate, but not strongly so, with the grooves strongly marked, quite deep and broad, anterior pair of parallel lines fine and extending to about the middle, parapsidal grooves very deep, broad, and widely separated anteriorly, converging toward the scutellum, median groove fine and narrow anteriorly and extending to the scutellum, where it is broader, lateral grooves long, deep, and broad, extending well forward, but not quite reaching the anterior part of the thorax. Mesopleuræ punctate, shining with a smooth polished area. Scutellum black, subopaque, distinctly rugose, rounded at the apex, and without fovea at the base. Abdomen small, smooth, black, and shining. Legs rufous, blackish brown basally. Wings hyaline, veins blackish brown and very heavy; radial area closed; second cross-vein angulate outwardly, cubitus not reaching to the first cross-vein; areolet large; cell open above; anal vein broken and curved downward to nearly the inner margin. Length, about 2.50 mm.

Gall. In clusters on the leaves of wild rose (*Rosa* sp.). Monothalamous and green when fresh. Rounded at base, thence gradually becoming broader and in general form somewhat resembles a miniature simlin squash. The top is covered with rather long, well-developed, pointed projections, each of which has a long, hairy, tentacle-like appendage at the tip, which readily becomes detached in handling, especially when the

gall is dry and old. Length, about 4 to 5 mm. Width on top, excluding the spines, about 4 mm. and about 1 mm. at extreme base at the place of attachment to the leaf.

Habitat: Quail Flat, Tulare County, California, altitude 7,200 feet. Galls July 1, 1910. Flies March 23, 1911. Dr. Edwin C. Van Dyke, collector. Several specimens of the flies and galls of this distinct species were sent to me by Mr. Lewis H. Weld, who received them from Dr. Van Dyke while they were collecting together in the mountains of California. The species is allied to *R. gracilis*, from which it differs in having the thorax less punctate and more shining and by having the grooves more distinct. The female is unknown. According to Mr. Weld the galls are densely clustered together in an indistinguishable mass on a leaf, hiding the blade of the leaf completely. The greatly enlarged illustrations were made by Mr. Weld.

THE SEPARATION OF SOME SPECIES OF LINEODES

(*Lepidoptera, Pyralidæ*)

By HARRISON G. DYAR

The species of *Lineodes* that are present in the collection of the National Museum separate as follows. I have not considered the species unknown to me.

White silvery subterminal line forming a loop or spot at vein 5.

Subterminal line forming a double sagittate marking; veins 4-5 of hind wing stalked *elcodes* Dyar

This line forming a single point or triangular spot; veins 4-5 of hind wing generally from the cell.

Hind wing with a thick comma-shaped mark on the disk, edged by black lines.

Discal mark of hind wing distinct, complete . . . *hieroglyphalis* Guenée

This mark faint, separated into two rings . . . *monetalis* Dyar

Hind wing without such marking on the disk.

White mark beyond cell forming a right angle above.

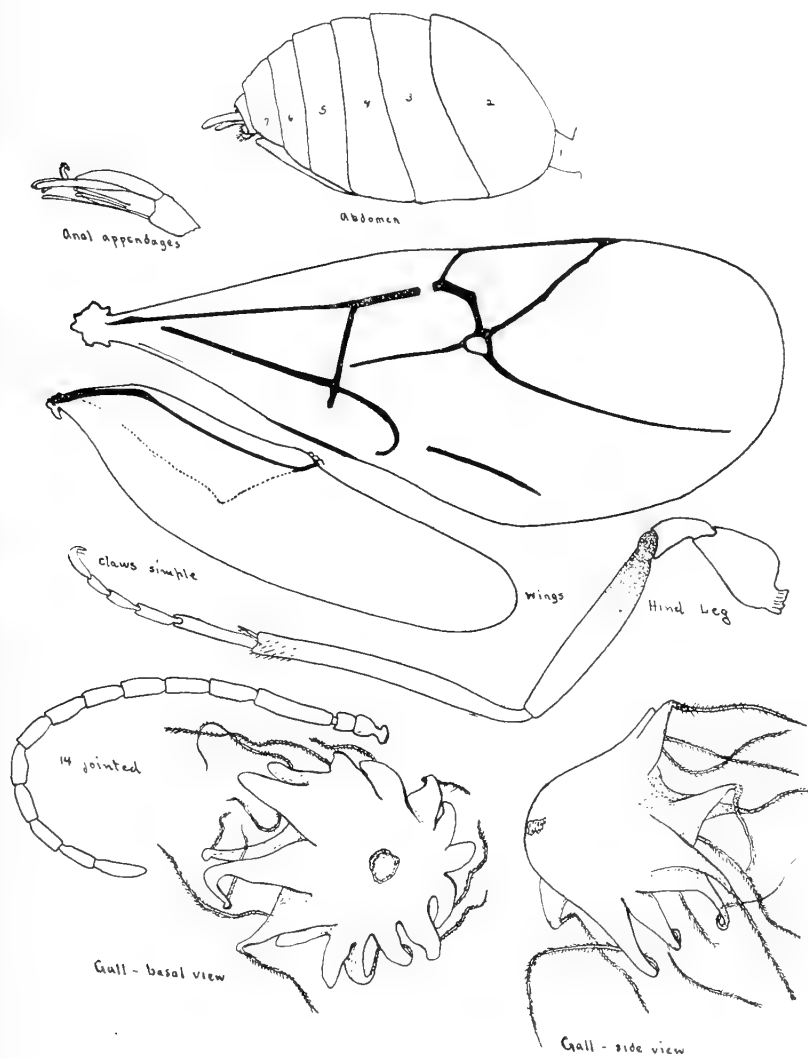
Smaller, white marks expanded, more variegated . . *vulnifica* Dyar

Larger, dark red-brown; white mark small, inconspicuous.

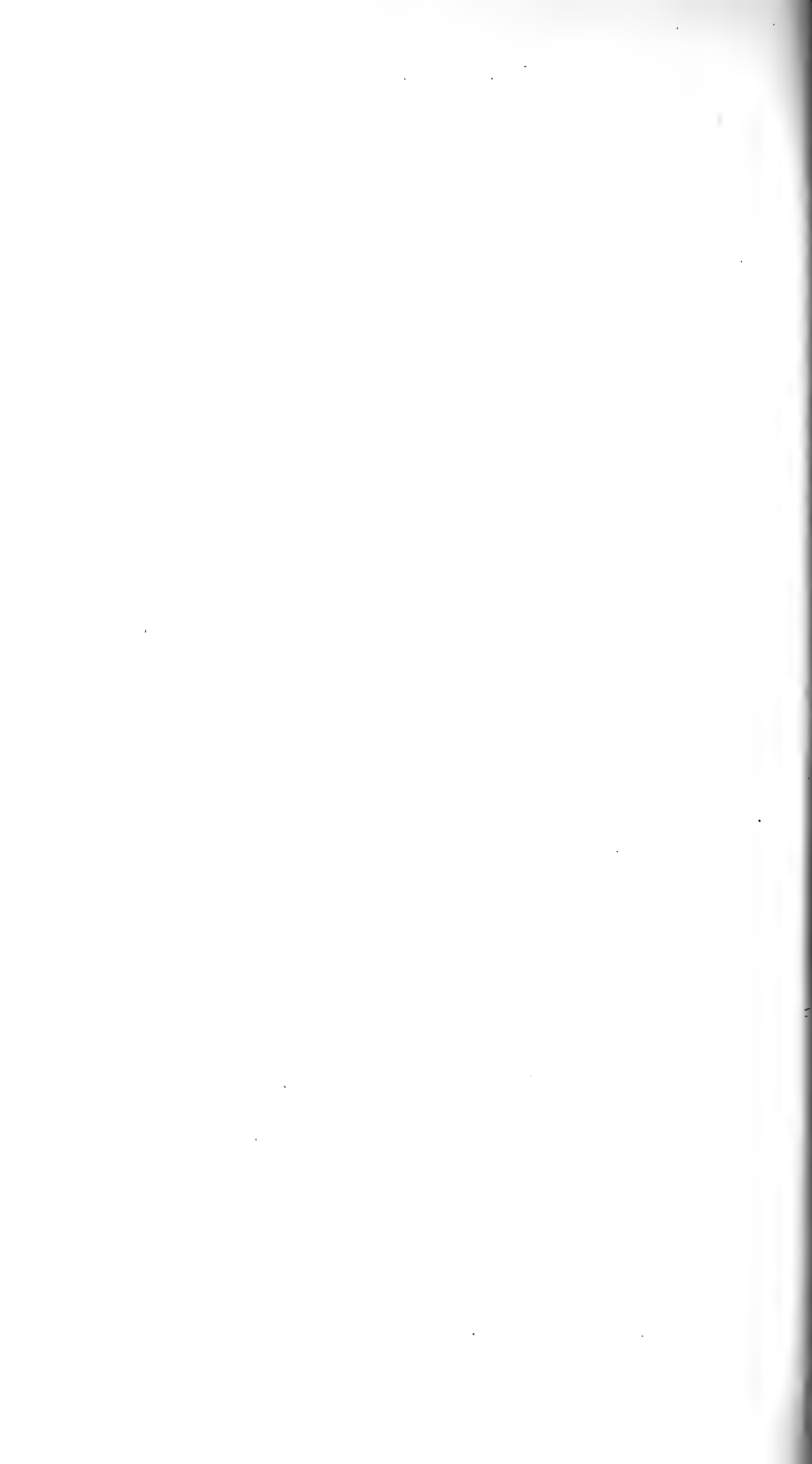
Silvery subterminal line with slight shallow loop; veins 4-5 of hind wing from cell . . . *serpualis* Lederer

Silvery subterminal line with a long sharp loop; veins 4-5 of hind wing stalked . . . *craspediodonta* Dyar

White mark beyond cell forming a round arc above . *mesodonta* Hampson



RHODITES WELDI BEUTENMÜLLER



White silvery subterminal line straight or crenulate, not forming a loop or spot.

Hind wing with veins 4-5 from the cell.

Fore wing with sinuous brown band from middle of inner margin to costa then toward tornus and reflexed to apex.

This band continuous *integra* Zeller

This band broken into oval patches *interrupta* Zeller

Fore wing without such band; stigmata large, dark, outlined by white shades.
triangularis Möschler

Hind wing with veins 4-5 coincident *contortalis* Guenée

Lineodes elcodes Dyar.

Ciraphorus elcodes Dyar, Proc. U. S. Nat. Mus., xxxviii, 272, 1910.

Six specimens are before me from Mexico.

Lineodes hieroglyphalis Guenée.

Lineodes hieroglyphalis Guenée, Spec. Gen., viii, 235, 1854.

Stenoptycha convolutalis Hampson.

Four from Brazil and two from Costa Rica are before me, the latter labeled *convolutalis*. I am unable to separate them specifically from the Brazilian specimens.

Lineodes monetalis, new species.

Near *hieroglyphalis*; smaller, frailer, the markings on hind wing clouded and obsolescent, the marks on disk separated into two component rings; marks of fore wing much the same as in the allied form, the tooth of subterminal line blurred and often forming a triangular spot. Expanse, 16 mm.

Type, No. 16003, U. S. Nat. Mus.; Misantla, Mexico, November, 1910 (R. Müller). Also two others from Mexico, one from Costa Rica, and ten from Panama.

Lineodes vulnifica, new species.

Allied to *hieroglyphalis*, but the spots of hind wing reduced practically to obliteration; a small round spot remains subcostally and a little oval one on submedian; fore wing much as in *hieroglyphalis* in general, but the details all slightly different; most noticeable is the shape of the angular marking formed by the outer line, being here strongly excavate submarginally, while in *hieroglyphalis* it is straight or gently arcuate. Expanse, 18 mm.

Type, No. 16004, U. S. Nat. Mus.; Cayenne, French Guiana, June,

1904 (W. Schaus). Also two more from Cayenne and five from Panama.

Lineodes serpulalis Lederer.

Lineodes serpulalis Lederer, Wien. Ent. Mon., vii, 417, 1863.

Six specimens are before me from Brazil.

Lineodes craspediodonta, new species.

Near *serpulalis*, of the same size and color; outer line with a larger tooth on vein 2; quadrate black patch below apex crossed by two pale veins instead of inclosed by them; a long tooth in the silvery submarginal line instead of a slight indentation. Expanse, 25 mm.

Type, No. 16005, U. S. Nat. Mus.; Bolivia (Schaus collection).

Lineodes mesodonta Hampson.

Stenoptycha mesodonta Hampson.

Two specimens are before me from Costa Rica labeled by Mr. Schaus, and one from Panama.

✓ **Lineodes integra** Zeller.

Lineodes integra Zeller, Verh. Zool.-Bot. Ges. Wien, xxiii, 328, 1873.

Fifty specimens before me from Florida, Texas, and southern California, one from Jamaica, one from Mexico, and one from Brazil. The larvæ live on the leaves of *Solanum* and are occasionally injurious to cultivated potato.

✓ **Lineodes interrupta** Zeller.

Lineodes interrupta Zeller, Verh. Zool.-Bot. Ges. Wien, xxiii, 329, 1873.

Two are before me from Texas.

✓ **Lineodes triangularis** Möschler.

Lineodes triangularis Möschler, Abh. Senck. Ges., xv, 305, 1889.

Four specimens are before me from southern Florida, one from Mexico, and two from Brazil. The larvæ live on the leaves of the pepper plant.

✓ **Lineodes contortalis** Guenée.

Lineodes contortalis Guenée, Spec. Gen., viii, 236, 1854.

Four are before me from Florida, three from Mexico, four from Panama, one from French Guiana, and two from British Guiana, the latter bred from *Physalis pubescens* by Mr. H. W. B. Moore.

ON CATOCALA DENUSSA AND C. HERODIAS

(Lepidoptera, Noctuidæ)

By WILLIAM BEUTENMÜLLER

Through the kindness of Mr. George A. Ehrman I recently had the opportunity of examining the type of *Catocala denussa* which he described in the Journal of the New York Entomological Society, Vol. I, p. 152, 1893. It is verily, as Mr. Ehrman states, a very strange form of *Catocala*, and I have never seen anything like it among the many thousand specimens I have examined. In size, shape, and coloration of the hind wings it resembles *C. habilis*, but the coloration and markings of the fore wings are totally different. It is possibly an extreme variety, or an aberration of *habilis*, while on the other hand it may be a distinct species, and I would consider it so until we have more material and evidence at hand to prove otherwise. It is undoubtedly a rare species, as was *C. herodias* at one time. *Herodias* remained unique for many years, or only a few specimens were known to exist in collections, and it posed as a variety of *C. ultronia*. Recently, however, a number of examples were taken at Lakehurst, New Jersey, by several collectors, and it was bred by Mr. Charles E. Sleight from a larva found on scrub oak (*Quercus nana*). Thus *herodias* is a valid species and is allied to *C. coccinata* and not to *ultronia*, which belongs to a different group.

Catocala denussa has the fore wings dark smoky brown with the veins marked with black, particularly those beyond the transverse posterior line. The transverse anterior line is very narrow, sordid white, and three times outwardly curved. The transverse posterior line is also very narrow, black, and marked with dirty brown-white outwardly. The teeth opposite the cell are sharp, subequal, and thence dentate to the inner margin. The subterminal line is scarcely evident. The fringes are brown and whitish at the base. The reniform is round, concolorous to the ground color of the wing, with a small, rounded, grayish white center. The subreniform is scarcely perceptible. The hind wings are orange yellow with the black median band angulate and extending to the inner margin. The marginal band is black, broadest at the costa, and the apex of the wing is orange. The fringes are narrowly orange at the base and whitish outwardly. The head and thorax are brown, mixed with gray, and the abdomen is brown. The undersides of the fore wings are dull orange with two smoky brown bands, and the outer part is brown with

the veins black. The hind wings are orange with the median band narrower than above and not extending to the inner margin. The outer marginal band is brown and the apex wants the yellow patch. The legs structurally are like *C. habilis*, all being spinulated. The single type male was taken in Allegheny County, Pennsylvania.

DESCRIPTIONS OF SIX NEW PYRALIDÆ FROM BRITISH GUIANA

By HARRISON G. DYAR

PYRAUSTINÆ

Dichocrocis penniger, new species.

Nearly solidly black-brown. Fore wing with subbasal and inner lines slender, white, slightly wavy; a wedge-shaped costal white spot between the obsolete stigmata; outer line slender, white, obscured below, running out close to margin over discal venules, retracted at vein 2; fringe white below apex and at tornus. Hind wing with two faint pale lines, the outer like the outer of fore wing, strongly retracted at vein 2; outer margin excavate between veins 4 and 6, the fringe white there and from tornus to vein 3, with black basal interline. Anal tuft white in the male. Expanse, 17–19 mm.

Cotypes, ♂ and ♀, No. 16048, U. S. Nat. Mus.; Botanic Gardens, Georgetown, British Guiana, bred from larvæ on *Gardenia* (H. W. B. Moore).

Nomophila absolutalis, new species.

Fore wing narrow, apex rounded; dark gray without markings; discal dots represented by blackish clouds, the orbicular small, the reniform large; at apex of costa three yellowish dashes; fringe pale with a broken dark interline. Hind wing translucent whitish, veins and margin narrowly gray, the apex a little more extensively so. Expanse, 17 mm.

Type, ♀, No. 16049, U. S. Nat. Mus.; La Bonne Intention Plantation, British Guiana, bred from larvæ on *Marsilia polycarpa*, an aquatic weed (H. W. B. Moore).

CHRYSAUGINÆ

Idnea felicella, new species.

Bright red-brown; basal space of fore wing chestnut brown with ver-

milium shade outwardly, limited by the slightly curved whitish inner line; mesial space pink inwardly, crossed by an oblique red-brown mesial shade and discal mark; outer line whitish, uniform, a little excurved mesially; terminal space dark with vermilion shading at apex. Hind wing fuscous with a vermilion shade along submedian area, cut outwardly by a fragment of a white line, angled on submedian fold. Expanse, 20 mm.

Cotypes, two females, No. 16050, U. S. Nat. Mus.; Kitty Plantation, British Guiana, bred from larvæ on *Passiflora* (H. W. B. Moore).

CRAMBINÆ

Chilo morbidellus, new species.

Fore wing light gray powdered with blackish; discal dot black, quadrate; two outer lines blackish, faint, irregular, parallel, curving around from outer part of costa to inner margin beyond middle; terminal dots minute, black, in the incisions of the inner fringe-layer, which on the shadowed side of oblique light appears as a fine terminal crenulate line. Hind wing soiled whitish, gray along costa, with fine terminal dark line. Expanse, 17–20 mm.

Cotypes, ♂ and ♀, No. 16051, U. S. Nat. Mus.; Nonpareil Plantation, British Guiana, bred from larvæ in stems of razor-grass, *Paspalum* sp. (H. W. B. Moore).

Ubida delinqualis, new species.

Fore wing bronzy brownish with blackish discal point. Hind wing creamy white. Abdomen grayish above; thorax brown; palpi red-brown. Expanse, 21 mm.

Type, ♀, No. 16052, U. S. Nat. Mus.; Nonpareil Plantation, British Guiana, bred from larvæ in stems of *Hydrocleis*, a common aquatic plant (H. W. B. Moore).

PHYCITINÆ

Vitula bodkini, new species.

Fore wing with no tuft of hairs near base of costa below in the male; veins 3 and 4 of hind wing running very close at the base, appearing stalked; antennæ of male simple, very slightly thickened and bent near base. Head rather roughly scaled, the scales erected behind, not tufted in front. Labial palpi smooth, upturned, reaching vertex. Maxillary palpi slender, flattened, small. Light gray, basal space clear; inner line a broad black shade, sharply incised by the pale base on submedian;

discal dot double, black, distinct ; outer line near margin whitish, preceded by submacular blackish band ; terminal dots small, black. Hind wing fuscous shaded about costa and margin. Expanse, 10–14 mm.

Cotypes, two males, three females, No. 16046, U. S. Nat. Mus. ; Georgetown, British Guiana, bred from larvæ feeding on *Saissetia nigrum*, a scale insect (G. E. Bodkin).

A NOTE ON DIATHRAUSTA NERINALIS WALKER

(*Lepidoptera, Pyralidæ*)

By HARRISON G. DYAR

This species varies so much in appearance from different localities that I have divided up the specimens before me into forms, or races. They are the following. *D. delicata* Warren from French Guiana is unknown to me.

DIATHRAUSTA NERINALIS Walker

Form **reconditalis** Walker.

Hymenia reconditalis Walker, Cat. Brit. Mus., xix, 943, 1859.

Aediodes minualis Walker, Cat. Brit. Mus., xxxiv, 1297, 1865.

Diathrausta octomaculalis Fernald, Ent. Amer., iii, 127, 1887.

Wings moderate ; lines occasionally with a little orange color replacing the white in the ♀. ♂ with white streak from discal mark to margin of hind wing.

New Haven, Connecticut (A. E. Verrill) ; Watchung Mts., New Jersey, June, 1899 (W. D. Kearfott) ; New Brighton, Pennsylvania, September, 1902 (H. D. Merrick) ; Pittsburgh, Pennsylvania, July, 1905, and August, 1904 (H. Engel).

Form **harlequinialis**, new.

A larger, brighter form, the white of the lines conspicuously replaced by orange in the ♀, partly so in the ♂. Discal spots three on fore wing, two on hind wing, white, the line on hind wing of male disconnected from the upper discal dot.

Chimney Gulch, Golden, Colorado, July, 1904 (E. J. Osler) ; Fort Collins, Colorado, August, 1898 (C. P. Gillette) ; Boulder, Colorado, August (T. D. A. Cockerell) ; Las Vegas Hot Springs, New Mexico

(H. S. Barber); Santa Rita Mts., Pima County, Arizona (O. C. Poling); Tehuacan, Mexico, October (R. Müller).

Type (Tehuacan, Mexico), No. 16006, U. S. Nat. Mus.

Form **cubanalís**, new.

A small form, the ♂ slender, narrow-winged, the whitish spots reduced to little dots; half-line of hind wing narrowly discontinued from discal dot; ♀ with the white dots a little larger and with a trace of orange on the lines.

Baracoa, Cuba, January, 1903, August, 1902 (W. Schaus).

Type, No. 16007, U. S. Nat. Mus.

Form **minutalis** Druce.

Diasemia minutalis Druce, Biol. Cent.-Am., Lep. Het., ii, 560, 1899.

A rather large form, the outer of the three discal spots single, small, smaller than the other spots. (In the other forms, when the outer discal is small the other spots are smaller still.) Lines slender, white, without any orange tint.

Orizaba, Mexico. Druce's unique type is the only specimen before me.

Form **cacalis**, new.

A medium sized form, rather smaller than *reconditalis*, the white spots small, the lines narrow and not pronounced, without orange in either sex; half-line of hind wing of male disconnected from the discal dot rather widely.

Guadalajara, Mexico (Schaus collection); Jalapa, Mexico (Schaus collection); Colombia or Ecuador (W. T. H. Rosenberg).

Type (Guadalajara), No. 16008, U. S. Nat. Mus.

Form **angustella**, new.

A small form, the white patches on the fringe well marked; lines slender, white, without orange; spots small, the outer on fore wing constricted or geminate; the discal on hind wing in line with the half-line and generally connected with it.

Porto Bello, Panama, March, 1912 (A. Busck); Paraiso, Canal Zone, Panama, January, 1911 (A. Busck); Corozal, Canal Zone, Panama, March and April, 1911 (A. Busck), July, 1912 (J. Zetek, C. P. Crafts); Trinidad River, Panama, May, 1911 (A. Busck); Cabima, Panama, May, 1911 (A. Busck).

Type (Trinidad River), No. 16009, U. S. Nat. Mus.

Form **nerinalis** Walker.

Desmia nerinalis Walker, Cat. Brit. Mus., xix, 928, 1857.

Very similar to *reconditalis*, in fact scarcely distinguishable, but the two forms are at the extreme ends of the range of the species. The white half-line of the hind wing of the ♂ is broader than in *reconditalis*, and the inner white spots of fore wing are somewhat larger.

Castro, Parana, Brazil (Schaus collection).

NOTICE OF VOLUME II, NO. 4, OF BARNES AND McDUNNOUGH'S "CONTRIBUTIONS TO THE NATURAL HISTORY OF THE LEPIDOPTERA OF NORTH AMERICA"

By HARRISON G. DYAR

This number contains descriptions of "apparently" new Lepidoptera, taken on a trip to southern Florida. Mr. J. A. Grossbeck was also in this expedition, and is preparing a general list of the material, having enlisted the assistance of Mr. W. D. Kearfott in the Pyralidæ. Our authors, in their haste, as I suppose, to anticipate any new species that might possibly have been described by these gentlemen, have issued the present paper. Many subjects have not been carefully considered, and we have been inflicted with an unusually large proportion of needless synonymy. Fortunately, at the time of the receipt of this paper, Mr. Grossbeck was in Washington with material from his Florida collections. This he kindly allowed me to examine in connection with the Barnes & McDunnough paper, so that I have been able to recognize about half of the forms described. It has seemed to me worth while to notice this paper, as I am in a position to correct a certain proportion of the errors into which the authors have fallen.

NOLIDÆ

Celama obliquata B. & McD. is *Nola lagunculariæ* Dyar, a true *Nola*, not a *Celama*, as Mr. Grossbeck's material verifies. Hampson made *lagunculariæ* a synonym of *apera* Druce, but there are certain differences apparent.

NOCTUIDÆ

Acidaliodes eoides B. & McD. This belongs to *Pseudocraspedia* Hampson, not to *Acidaliodes*, and appears to be but a fresh specimen

of *P. basipunctaria* Walker. Mr. Grossbeck has a figure of Walker's type, which agrees well with faded specimens of the species before us, a specimen of which Mr. Grossbeck has kindly donated to the National Museum.

There appear to be two species of *Pseudocraspedia* in Florida; besides the one mentioned, also *Sigela penumbrata* Hulst. This is darker and more uniform, the markings still fainter, the terminal dots nearly obliterated. I distinguish the two by the terminal dots. *Sigela* Hulst antedates *Pseudocraspedia* Hampson, so the synonymy of our species will stand:

Sigela basipunctaria Walker.

melanosticta Hampson.

eoides Barnes & McDunnough.

Sigela penumbrata Hulst.

Aresia parva B. & McD., described as a new genus and species of Noctuidæ, is a synonym of *Afrida ydatodes* Dyar. I am not surprised that our authors thought this a Noctuid, being quite innocent of any knowledge of exotic Lithosiidæ. See my remarks in the introduction to my *Afrida* paper.

Proroblemma testa and *Tyryssa multilinea* following were not in Mr. Grossbeck's material, so any remarks of mine upon them would be of little value.

Anomis serrata B. & McD. is the same as *Cosmophila xanthindyma* Boisduval. *C. erosa* Hübner occurs in two forms the world over, one, *erosa*, with the male antennæ ciliate and bristled, which is the commoner form in America, the other, *xanthindyma*, with the male antennæ shortly pectinate, apparently the commoner form in the Old World. Hampson considered the two forms as one species, as Drs. Barnes and McDunnough could have enlightened themselves by a perusal of the "Moths of India." But I am of opinion that the forms are specifically separable, after carefully going over my material, and shall therefore hereafter follow our authors in the separation, although not in the use of the new name.¹

¹ Another species of this group is before me from Cuba, which I propose to call

Cosmophila tingescens, new species.

Pale mustard-yellow, faintly sprinkled with purplish; the lines fine, faint, pale brownish, separated on inner margin, with the ordinary pattern of *Anomis*. Inner line slightly oblique, coarsely waved; orbicular annular, reniform full, faint; outer line excurved above, with angulation at vein 4, running in along 3 to cell, then nearly straight to inner margin. Hind wing pale yellow at base, the outer half shaded with red. Beneath

PSYCHIDÆ

Manatha nigrita B. & McD. is the form of *Platæceticus gloveri* Pack. making a grass case. Mr. F. M. Jones formerly collected them in Biloxi, Mississippi, but I was unable to separate the adults from *gloveri* and so named them for Mr. Jones. Whether they are properly separable on the cases alone may require further evidence. The name *nigrita* can be used for the grass case.

Prochalia pygmæa B. & McD., described as new genus and species from one male, is the ordinary tree-trunk form of *P. gloveri*. The venation has no value in these species. I examined five specimens from my series of *carbonaria* and found no two alike. I could make four more "genera" from them equally as distinct as *Prochalia*.

COCHLIDIIDÆ

Prolimacodes scapha, subspecies *argentimacula* B. & McD. My Florida specimens agree. Most *scapha* in collections are from New York, so that the Florida form seems contrasted. Specimens from the Mississippi Valley and North Carolina are intermediate. A complete series might show the racial name unnecessary. The name *scapha* falls before *badia* Hübner.¹

PYRAUSTINÆ

Six new forms are described, but only three of them are before me. Of these, *Nacoleia hampsoni* and *Loxostege albiceris floralis* were submitted to me for determination by Mr. Kearfott and are apparently correctly described as new. *Stenoptycha solanalis* B. & McD. is, however, a synonym of *S. pterophoralis* Walker, and is in the National Museum from Florida, contained in the Schaus collection.

NYMPHULINÆ

Piletocera simplicialis B. & McD. is a good species, occurring with *P. bufalis* Guen. throughout its range. I have both species from Florida.

straw-yellow, all of fore wing except costa and margins strongly shaded with deep red. Expanse, 32 mm. Cotypes, two females, No. 16053, U. S. Nat. Mus.; Santiago, Cuba, June and October, 1902 (W. Schaus). Besides this species, Mr. Schaus captured both *C. erosa* and *C. xanthidyma* in Cuba.

¹ Hübner figured *badia* among his European Noctuidæ. At present writing I do not know his locality. If Florida, the name would preoccupy *argentimacula*. The name *undifera* Walker may be deleted from the synonymy of *scapha*. It is from Honduras and at least racially distinct.

Apparently the species has not been named before, a circumstance of pure chance in favor of our authors. Further remarks will be made on the two species in my forthcoming report on the Smithsonian Panama expedition.

PYRALINÆ

One new species, unknown to me.

MACROTHERCINÆ

One new species, not in Mr. Grossbeck's collections.

SCHOENOBIIINÆ

Two new species, unknown to me for the same reason.

CRAMBINÆ

Two new species. In all these cases I refrain from comment unless specimens are actually before me. Mr. Grossbeck's Crambids were all named by Mr. Kearfott and were not brought to Washington.

Storteria unicolor B. & McD., new genus and species. The genus should be transferred to the Schoenobiinæ, where it will cover three of the American species referred to *Scirpophaga* by Hampson (Proc. Zool. Soc. Lond., 914, 1895), viz, *albinella* Cr., *leucatea* Zell., and *tinctella* Walk. The species *S. unicolor* B. & McD. is before me from Miami, Florida, French and Dutch Guiana, and Brazil. My specimens bear identification labels by M. Paul Dognin "*Scirpophaga holophæalis* Hampson" and one in Mr. Wm. Schaus's writing "*Scirpophaga albicostella* Schaus, type;" but I can not find that either of these names has yet been published, so that *unicolor* apparently has priority, unless the species should prove to be only a dark form of *tinctella* Walk. As to *Storteria*, Hampson would evidently make it a synonym of *Scirpophaga* Treits.; but it appears to me to differ in so many points from his characterization of that genus as to warrant its retention. The name falls, however, before *Rupela* Walker (Cat. Brit. Mus., Lep. Het., xxviii, 523, 1863), of which the type is *R. nivea* Walk. = *albinella* Cram.

ENDOTRICHINÆ

Davisia singularis B. & McD. A pretty little species, of which Mr. Grossbeck kindly presented a specimen to the National Museum.

EPIPASCHIINÆ

Jocara perseella B. & McD. is a synonym of *J. incrustalis* Hulst. I

have bred the species in Florida on *Persea* and published the results long ago, apparently without attracting the attention of our authors.

Tetralopha querciella B. & McD. is a synonym of *T. subcanalis* Walker, as that species exists in our collection. I have no recent notes on Walker's type.

PHYCITINÆ

Acrobasis tenuella B. & McD. and *Immyrla bumeliella* B. & McD. are not contained in Mr. Grossbeck's material.

Mescinia ? *estrella* B. & McD. Mr. Grossbeck has a single specimen of this peculiar species, a female, like the type.

Divitiaca B. & McD. A new genus with three new species, which I had already determined as new for Mr. Grossbeck. Of *D. ochrella* and *D. similella* Mr. Grossbeck has a series and generously presented a specimen of each to the National Museum. Of *D. parvulella*, one female, which is generally darker, the hind wing blackish, but I think correctly referred here. The types are males only.

Homæosoma differtella B. & McD. is *H. electellum* Hulst.

Varneria atrifasciella B. & McD. is said to be possibly a variety of *V. postremella* Dyar, but according to description, distinct. Mr. Grossbeck did not have any.

ANERASTIINÆ

Two species, both absent from Mr. Grossbeck's material.

PTEROPHORIDÆ

Four new species, on which I do not care to comment, but will leave them for the consideration of Mr. August Busck.

From the above it will be seen that of these forty species about one-half are known to me and that of those so known nearly one-half are synonyms. We hope that the other unknown half are in better fortune. Work of this character should not be commended. Authors who will describe from southern Florida, where the fauna is so largely West Indian, should acquaint themselves first with that fauna. In this case there is no excuse, as the resources of the National Museum could just as well have been tapped before publication as after, especially as Dr. Barnes has completed an arrangement with the Museum whereby those resources are available to him. Nothing but the haste to get ahead of someone else will explain this work, and that aggravates rather than palliates the offence.

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Insecutor Inscitiae Menstruus

Vol. I

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No. 9

PRELIMINARY CHARACTERIZATION OF THE VECTOR OF VERRUGA, *PHLEBOTOMUS VERRUCARUM* SP. NOV.

By CHARLES H. T. TOWNSEND, Lima, Peru

Although the transmission of verruga by means of the species below described has not yet been accomplished, it is now practically certain from the entomological standpoint, considered in connection with the very peculiar conditions of the verruga zones, that it is the vector, if not the true intermediary host, of the causative organism of the disease. Its characterization in this connection is therefore called for.

Phlebotomus verrucarum, new species.

Color of fresh specimens pale fuscous-pallid, more or less whitish to watery, invisible on wing by artificial light; balsam mounts bright very dilute tawny-yellowish, faintly shaded with fuscous on head, mesoscutum, and abdominal segments; specimens in fluid pallid-tawny; dried specimens pallid-fuscous with a lens, appearing more deeply fuscous with the binocular, especially with the higher magnifications, legs silvery, wings whitish or silvery except the bordering fringe which appears blackish in direct lights.

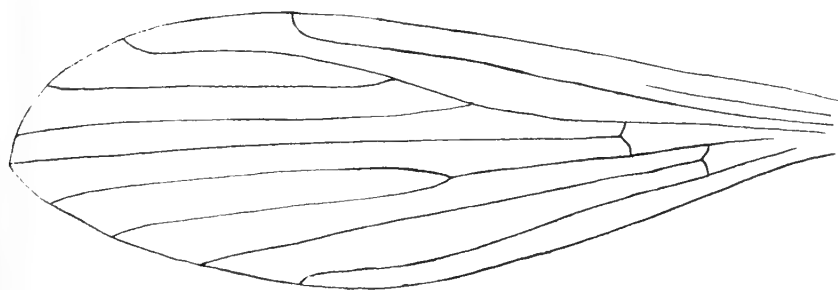
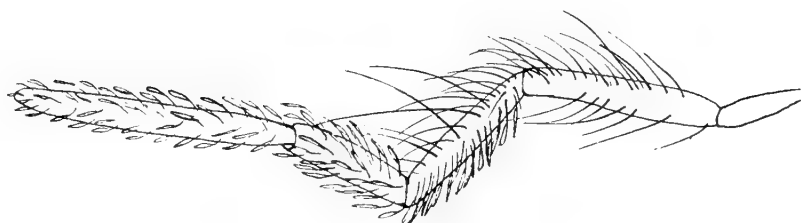
Hairs brownish to blackish in balsam mounts, dry appearing tawny to brownish, those of posterior wing fringe varying from black to white according to lights. Whole mesoscutum thickly set with long erect curved coarse hairs, these being as long as head including clypeus but excluding proboscis. Scutellum with a thick bunch of similar hairs of same length, segregated from those of mesoscutum. Hairs of clypeus and vertex in two separate bunches, those of latter more numerous, all erect and not quite so long as those of thorax. Hind edge of second abdominal seg-

ment with erect hairs about same length as those of clypeus and vertex, the coxæ also with some hairs of about same length. Third to eighth abdominal segments with bunches of shorter hairs on posterior edge, not one-half length of those of thorax, suberect to erect, showing best on tergum but also extending on sides and venter. Hypopygium of both sexes with equally long similar hairs.

Wing fringe is longest near base on posterior border, in region of anal angle of wing, these hairs being straight, very thickly set, as long as those of thorax or somewhat longer, but very much finer, whence they gradually decrease in length to tip of wing, being continuous to tip in the single male, and usually giving out just before tip in female. Fringe of costa longest at base, being here about as long as clypeal hairs and about as coarse, thence shortening rapidly to wing tip, or more or less uniformly shorter on middle half of costa, the hairs of wing veins in general about as long as those on middle of costa. Tibiæ with a few regularly placed very fine suberect hairs, and many shorter appressed flattened scale-like hairs. Antennæ with joints rather finely hairy to end, but without geniculate or other spines. Palpi with coarser and longer hairs on joints 2 and 3, joint 3 also showing many shorter curved thickened hairs closely set on outer surface, joints 4 and 5 showing only these thickened hairs slightly shorter and flattened, gradually shortening toward tip of joint 5 and all subappressed.

Antennæ composed of fourteen joints besides the two swollen scape joints, the first flagellar joint very elongate. Palpi composed of five segments, their average formula in female being approximately 5-10-12-7-16, but some slight variation has been noticed from these proportions. The fifth joint appears to be composite, but no definite sutures are visible. The mouth parts agree closely with those figured by Newstead for *P. papatasii*. Venation normal. The above description applies equally to both sexes, except that palpi of male seem more thickly haired and last joint is not quite so elongate; the proboscis of female nearly equals head plus clypeus, that of male being only about two-thirds such length.

Hind tibiæ of female very elongate, longer than middle tibiæ, front tibiæ still shorter than middle ones, but all elongate. Front and middle metatarsi of female about equal, the hind ones slightly longer. Legs of male not so elongate as those of female, the tibiæ being shorter, hind and middle tibiæ about equal, hind metatarsi longer than middle ones. Male hypopygium in general similar to that of *P. perniciosus* as figured by Newstead. Intromittent organ of penis widely exerted.



Phlebotomus verrucarum Towns.

Length of both sexes, 1.50 to 1.75 mm. in customary position which does not include head and proboscis, the head being extended ventrally from the strongly humped thorax. Head and proboscis of female less than half body length, about 0.80 to 0.85 mm. ; of male about 0.60 mm.

Described from three dry-mount females and four balsam-mount females captured indoors by lamplight at the mouth of Verrugas Canyon on the night of July 9, and one dry-mount male captured in a dark recess of ravine wall at bottom of Verrugas Canyon under railway bridge (Verrugas Bridge of the Central Railway) on the forenoon of July 10, 1913.

It may be noted that the body and wing surfaces and hairs are iridescent in sunlight as seen with the 65 magnification of the binocular, the wing surfaces and leg surfaces appearing reticulate-iridescent, the tarsal joints most beautifully violet-blue varying through all shades of green to cupreous in very oblique sunlight. Considering the fact that these gnats never venture into the sunlight, so far as is at present known, the wonderful color effects which they display would seem to be entirely lost to their perception. It is probable, however, that their mating operations take place about sundown, and that the diffused daylight at such times allows their perception of these color effects in a certain degree.

The three figures were drawn by Miss Helen T. Townsend, with camera lucida, from balsam mounts.

Note.—Since the above was written, the successful transmission of verruga by the above described species has been accomplished in a dog, injection being given on July 11 and eruption appearing on July 17. This establishes the complete demonstration of the species as the vector of verruga.

A NEW SPECIES OF AGROMYZIDÆ

(*Diptera*)

By J. R. MALLOCH

***Milichia orientalis*, new species.**

Female: Brownish-black, subopaque. Frons gray dusted; face thickly white dusted. Mesonotum with gray dusting, in some aspects with an olivaceous or greenish tinge; pleuræ with dusting slightly greenish and iridescent; scutellum colored as disk of mesonotum. Abdomen more distinctly shining than thorax, the dusting most distinct at base. Legs and halteres black. Wings clear, veins brown.

Frons slightly less than one-third the width of head; two orbital bristles below level of anterior ocellus, the upper one backwardly directed, the lower directed forward; anterior to these bristles there are only weak orbital hairs; central stripe with two rows of hairs which increase in length toward the front; antennæ normal; arista bare; basal joints swollen slightly; second joint elongated, length of entire arista equal to length of frons; cheeks linear, bristles carried well up toward base of the antennæ; proboscis not elongated. Mesonotum covered with very short hairs on disk; two dorso-centrals present; the pair of bristles between the posterior pair subequal with these; sterno-pleura with 3 bristles (1-1-1); disk of scutellum bare. Abdomen with segments 2 and 5 distinctly longer than 3 and 4, which are subequal, segment 5 longer than 2. Legs normal. Wings with veins 3-4 convergent, the apex of 3 bent down; outer cross vein at about its own length from end of fifth. Length, 2 mm.

Type: Cat. No. 15956, U. S. Nat. Mus.

Locality: Island of Guam, Ladrone Islands (D. T. Fullaway) 7 specimens.

A NEW HETEROSTYLUM FROM MEXICO

(*Diptera, Bombyliidæ*)

By FREDERICK KNAB

Heterostylum stigmatias, new species.

Male: Eyes broadly subcontiguous. Antennæ dark, the first joint dark brownish with blackish brown hair, the third joint black. Frontal triangle with a dense tuft of short black hair on anterior margin. Face clothed with pale yellowish brown hair, beneath with nearly white hair, some dark hairs above antennæ.

Mesonotum black, clothed with short and close dull brown pubescence becoming pale yellowish brown at the sides. Scutellum dull ferruginous, clothed with pubescence similar to that on mesonotum. Pleuræ clothed with dense, long, dull creamy pubescence.

Abdomen broad, short, and blunt; vestiture of brown, blackish and dull creamy yellow pubescence, the blackish hairs massed broadly upon the dorsum, the brown more laterally, the creamy hairs at the apical margins of the segments and most abundant laterally and on the apical half; vestiture of venter whitish with large patches of black hairs.

Wings limpid, with the venation typical of the genus; extreme base of wing honey yellow, followed by a broad dark brown fascia extending nearly to the apex of the second basal cell; subcostal and first veins ferruginous, the others dark brown.

Legs dull ferruginous, with fine very short and close yellowish pubescence and short black bristles; tarsi becoming black distally.

Length: Body about 12 mm., wing 13 mm.

Female: Similar to the male, but differing in the sexual characters. The brown vestiture of the mesonotum, scutellum, and abdomen inclines to ferruginous, but the abdomen shows the same tuftings of dull creamy hairs.

Frontera, Tabasco, Mexico; April 14 and 21 (C. H. T. Townsend).

Type: Cat. No. 16254, U. S. Nat. Mus.

One male and one female. The color of the body vestiture, as in other Bombyliidæ, appears to be subject to considerable variation. The unusually broad deep brown fascia near the base of the wing should serve to identify this species without difficulty.

NOTE ON THE AMERICAN SILVERY SPECIES OF ARGYRIA

(*Lepidoptera, Pyralidæ*)

By HARRISON G. DYAR

The American species of *Argyria* Hübner, that are known to me, which have silvery white ground color, separate by the following table. Sir G. F. Hampson listed them under the name *Platytes* (Proc. Zool. Soc. Lond., 943-948, 1895). *A. croceicinctella* Walker is not before me. Hampson lists it as with long palpi, like *auratella* and *jonesella*, from which Walker's description separates it. *A. interrupta* Zeller would fall with *multifacta* and *xanthoguma* in the table, but the costal triangular mark is more nearly apical, and touches the dentate marginal line. *A. subtilis* Felder is apparently the same as, or very near, *divisella* Walker. *A. mesodonta* Zeller would fall, from the description, with *tinguralis*, but seems distinct by the different color of the markings. *A. sordipes* Zeller is, no doubt, a southern race of *nivalis* Drury, as Zeller himself indicated.

No orange stripe or border along inner margin of fore wing.

Two slender lines across the wing, median and subterminal.

Subterminal line double; median with blotch on inner margin.

pustulella Walker¹

Lines single; no blotch on margin.

Subterminal line continuous, distinct, followed by a costal triangle.

tenella Zeller

Subterminal line obsolete below costa, without following mark.

rileyella Dyar

No subterminal line, only a streak and costal triangle.

Palpi white tipped.

Median line straight and erect, or broken, or obsolete.

Median line complete across wing.

Costal triangle cut by a white line.

Median line a uniform brown band; hind wing pure white *multifacta* Dyar

Median line slender, a dot on costa and margin; hind wing very pale yellow . . . *xanthoguma* Dyar

Costal triangle not cut by a white line . . . *argyrodia* Dyar

Median line broken into dots or obsolete.

Costal subapical triangle present, at least as a trace.

A red stripe along costa . . . *tinguralis* Dyar

No costal stripe.

Front of head white . . . *lacteella* Fabricius

Front of head with a rather broad brown stripe on each side . . . *diplomochlalis* Dyar

Costal subapical triangle absent.

Fringe white at tip . . . *nivalis* Drury

Fringe entirely leaden brown . . . *fimbrialis* Dyar

Median line straight, strongly oblique . . . *obliquella* Schaus

Median line excurved over cell, dotted . . . *furvicornis* Zeller

Palpi entirely yellow or brown.

Median line complete, sometimes thin or broken.

Front of head white . . . *divisella* Walker

Front of head yellow . . . *mesogramma* Dyar

Median line obsolete except for costal and marginal dots.

Front of head yellow like vertex . . . *opposita* Zeller

Front of head white . . . *centrifugens* Dyar

No markings on the wing . . . *simplex* Zeller

An orange stripe or dash on inner margin of fore wing.

Median band crossing the wing.

No yellow on inner margin between median band and base; palpi long.

auratella Clemens

¹Referable to *Crambus* and mentioned here only on account of its inclusion in *Platytes* by Hampson.

Some yellow scales on margin between median band and base.

Palpi short, yellow-brown.

Costal triangle thick, thorn-shaped; front white.

croceivittella Walker

Costal triangle thin, faintly cut by a white line . . . *schausella* Dyar

Palpi long, white tipped; front protuberant . . . *jonesella* Dyar

Median band absent or reduced to costal and marginal dots.

Two triangular marks on costa *supposita* Dyar

A narrow yellow costal line *lucidella* Zeller

No costal markings *argentana* Martyn

References to the old names will be found in Hampson's paper above alluded to. *Supposita* will be described more fully in my fourth Mexican paper; *multifacta*, *xanthoguma*, *argyrodis*, *fimbrialis*, and *centrifugens* in my report on the Smithsonian expedition to Panama.

***Argyria rileyella*, new species.**

Silvery white; front and vertex ocher yellow; a dorsal ocher stripe on thorax; fore wing with median slender uniform ocher line, curved a little near costa; a similar submarginal line, starting on costa, not visible below vein 6; black powdery terminal dots, followed by ocher, the fringe pale at tip. Hind wing without marking. Expanse, 19 mm.

Type, No. 16244, U. S. Nat. Mus., without locality, labeled by the late C. V. Riley as examined by Ragonot in 1886.

***Argyria diplomochalis*, new species.**

Front white with brown stripe on each side; vertex ocher-brown; fore wing silvery white; a median costal streak and similar subapical one; a dot near middle of inner margin; a terminal row of black dots, joining the deep purple-brown fringe. Hind wing faintly tinged with pale yellow, with traces of terminal dots. Expanse, 11 mm.

Cotypes, 12 specimens, No. 16245, U. S. Nat. Mus.; Culebra Island and Bayamon, Porto Rico, January and February, 1899 (A. Busck).

***Argyria tinguralis*, new species.**

Palpi long, red, white at tip; front and vertex white; antennæ red. Fore wing pointed at apex, silvery white; a red costal stripe with median and subapical teeth; a mark near middle of inner margin; a terminal red dentate line; fringe red-brown. Hind wing pure white. Expanse, 25 mm.

Type, No. 16246, U. S. Nat. Mus.; Tinguri, Carabaya, Peru (Schaus collection).

***Argyria obliquella*, new species.**

Platytes obliquella Schaus, MS.

Tips of palpi and front centrally impure white, fulvous brown elsewhere. Silvery white, costa and inner margin narrowly ocher-brown; fringe brown; an oblique, straight band from inner margin before middle to costa near apex. Expanse, 17 mm.

Cotypes, 7 specimens, No. 16247, U. S. Nat. Mus.; Castro, Parana, Brazil (Schaus collection).

***Argyria schausella*, new species.**

Palpi and vertex ocher-brown, front denuded but apparently also ocher-brown. Silvery white; thorax with a dorsal stripe; fore wing with narrow costal and inner borders of ocher scales; a straight mesial band expanding on costa and margin; a subapical triangle, cut by a faint white line; termen and fringe ocher and brown. Expanse, 19 mm.

Type, No. 16248, U. S. Nat. Mus.; Juan Vinas, Costa Rica, January (W. Schaus).

***Argyria jonesella*, new species.**

Palpi long, fulvous, white at tip; front conically protuberant. Silvery white; most of collar and disk of thorax ocher-brown; fore wing with costal, inner and terminal ocher-brown margins, the inner rather broad with a tooth at outer fourth; a broad oblique band from inner third of margin to costa beyond middle, curving a little and ending in the subapical tooth. Expanse, 19 mm.

Type, No. 16249, U. S. Nat. Mus.; Castro, Parana, Brazil (Schaus collection).

***Argyria mesogramma*, new species.**

Palpi, front and vertex ocher, with patches of brown, a few whitish scales on front below. Fore wing silvery white; median band erect, straight, brown, washed with ocher especially without; costal subapical triangle cut by a white line; a terminal dark brown line; fringe violaceous brown. Hind wing with traces of terminal line. Expanse, 16-18 mm.

Cotypes, 9 specimens, No. 16250, U. S. Nat. Mus.; Castro, Parana, Brazil (Schaus collection).

Possibly this is *subtilis* Felder, but Felder's figure gives no indication of the color of the front of the head.

CRITICISM AND MUSCOID TAXONOMY¹

By CHARLES H. T. TOWNSEND

Healthy criticism is always commendable, and even stage-effect criticism is occasionally permissible, but no criticism can be allowed to pass unchallenged which tends toward a distortion of the truth. Mr. W. R. Walton's article on "The Variation of Structural Characters used in the Classification of Some Muscoidean Flies"² is useful so far as his description of identifiable variants goes. The table of 10 specimens of "*Belvosia bifasciata*" signifies little, inasmuch as the specimens are from diverse sources of parentage. They may all be the same species, and they may not. As pointed out in conclusion, breeding of material from known parents must be carried out and that through several generations. Nothing short of this will demonstrate the limits of specific variants. Every student of the Muscoidea knows that these flies vary within certain limits, but recorded variations to be of service must be identified with certainty.

The series of *Ennyomma globosa* T., reared from *Chalcodermus æneus* by Mr. G. G. Ainslie at Clemson College, South Carolina, was examined by me at the time of rearing. The specimens showed practically no variation of importance. On the contrary I was much struck with their great uniformity, both as regards size and hairiness of the eyes in the male. The species is mentioned as *Myiophasia ænea*, whereas it is a perfectly distinct form. I consider *Ennyomma* a valid genus, and am willing to abide by the verdict of the future when generic characters shall have been more thoroughly correlated in these flies.

What is mistakenly called a new system of nomenclature proposed by me is explained fundamentally in a forthcoming paper, "A New Application of Taxonomic Principles." It is no new system, but a new application of the basic principles of the old system. The species status is discussed in another forthcoming paper, "The Species-status and the Species-concept." These two papers will not only throw light on the subject, but they will bear out the statements quoted from the Taxonomy of the Muscoidean Flies, page 13.

The opinion that the erection of a genus on a single specimen is folly

¹ This article should have appeared in the Proceedings of the Entomological Society of Washington, and was in fact submitted to that society for the purpose. It was, however, declined. It is printed here in the interest of fair play.—*Editor*.

² Proc. Ent. Soc. Washington, vol. xv (1913), pp. 21-28.

and should not be allowed is sweeping to say the least. It is always desirable to have abundant material, but single specimens may often be made the types of new genera with perfect propriety and in the best interests of taxonomy. This point is obvious.

As to my species of *Lucilia*¹ I cheerfully admit that their erection may not bear the test in all cases. As they stand, however, it simply remains to test them by bred material of known parentage. The names already applied will be found useful in carrying out such work.

Mr. Walton has declared himself in no uncertain terms as a champion of Mr. Coquillett's work on muscoid flies. About all that can be said on this subject is that time will fully demonstrate whatever merit that work may possess, and no one's commendation can increase its merit one whit. In the interests of truth I must go on record here that the majority of the said author's work in the Muscoidea will have to be completely revised. It is highly unfortunate that a new student of the superfamily should so unqualifiedly praise such work. One should wait until he has had time to become more familiar with the work in question before expressing himself so distinctly in favor of it. It is up to students who have access to the material to restudy all the muscoid specimens of which Mr. Coquillett has furnished published determinations. In making this assertion I am merely stating cold fact that has to be recognized.

I am in a position to know something of the difficult problems that beset muscoid taxonomy. To the best of my ability I am attempting to solve some of those problems. Their solution requires study of

- (1) Dried adult material;
- (2) Adult material in liquid;
- (3) Living adult material in the field for observation of host-habit and mating;
- (4) Dissections of fresh adult material for reproductive-system characters;
- (5) Reared adult material from collected hosts;
- (6) Adult material bred through several generations from an identified pair;
- (7) Egg material dissected from gravid females;
- (8) Adolescent-stage material dissected from gravid females and reared;
- (9) Geological history and geographical distribution;

¹ Tax. Musc. Flies, pp. 118-123.

(10) Philosophy of the facts thereby gained.

The field is wide enough for all who may wish to come, and no one need harbor petty jealousy of another's work. Facts and their philosophic aspects must be recorded as the work progresses. If undigested, they may be digested at leisure. Everyone's work will ultimately stand on its exact merits. It requires time to pass correct judgment as to real merit. Judgment must be unprejudiced. Work must bear the test of time. It is both unwise and unseemly for a beginner in a difficult subject to ridicule good work done by his predecessors. Caustic comment has no legitimate place in taxonomic literature, and solves no problems. In the minds of all right-thinking persons such comment serves no other purpose than to reflect on the commentator. I bespeak a spirit of cordial cooperation on the part of my confreres. Such spirit will be both highly appreciated and warmly reciprocated.

A NEW ACROLOPHUS FROM BRITISH GUIANA

(*Lepidoptera, Tineidæ*)

By AUGUST BUSCK

***Acrolophus sachari*, new species.**

Male: Labial palpi long, recurved, reaching beyond the middle of thorax, each joint loosely scaled toward its tip, dirty ochreous, shaded laterally with black. Antennæ serrate, ochreous. Head and thorax ochreous mottled with brown and black. Forewings dirty ochreous with a bluish sheen and mottled with black and dark brown; costal edge ochreous with equidistant blackish brown dashes, continued around apex; on the middle of the cell and at the end of the cell are two small blackish dots which are faintly connected with two similar dots on the fold by oblique lines forming an indistinct capital "N." Cilia ochreous with alternate tufts of black. Hindwings dark ochreous fuscous. Abdomen dark brown. Legs dusky.

The females have short, porrected, tortricid-formed, dirty ochreous palpi, a lighter ochreous head, and a less distinctly marked wing pattern.

Alar expanse: Male, 16-19 mm.; female, 23 mm.

Habitat: Georgetown, British Guiana (H. W. B. Moore).

Foodplant: Sugar cane, the larvæ living in silken tubes on the decaying cane roots underground.

U. S. Nat. Mus. type No. 16019.

THE TIPULIDÆ IN BRUNETTI'S "FAUNA OF BRITISH INDIA; DIPTERA NEMATOCERA"

By CHARLES P. ALEXANDER, Ithaca, N. Y.¹

The publication of this great work (November, 1912) affords us an opportunity to investigate the rather numerous genera that the author has recently erected (Records of the Indian Museum, vol. 6, 1911). As was suspected at the time of their characterization, most of these genera are based upon too trivial structural features to warrant recognition while some are strict synonyms of older well-known genera and due either to carelessness on the part of the author or his lack of familiarity with the holarctic fauna. Some of the glaring specific errata that appear in this work are noticed at the end of the article. The magnificent drawings by Bagchi are the most valuable single feature of the volume, and it is upon these figures that the following criticisms are largely based.

Cerastostephanus Brun. (p. 406) undoubtedly equals *Rhipidia* Meigen.

Atypophthalmus Brun. (p. 408) is very doubtfully a valid genus based entirely on the holoptic condition of the eyes. A close approach to this is found in many *Rhipidiæ* where the space left on the vertex is exceedingly narrow.

Gymnastes Brun. (p. 432) equals *Teucholabis* Osten Sacken, the character of a clubbed femur and the venation being approached by several true species of *Teucholabis*.

Mongomioides Brun. (p. 481) and *Paramongoma* Brun. (p. 484) have been considered by the writer in another article (Proc. U. S. Nat. Mus., vol. 44, p. 499).

Dasymallomyia Brun. (p. 494) equals *Gnophomyia* Osten Sacken. The venation of the type is similar to that of *G. aperta* Coq. (*non* Brunetti's *G. aperta* (p. 492), which, however, is a *Pedicine*, *Rhaphidolabis*) from British Columbia. The short, very hairy legs of which so much is made is characteristic of a group of tropical American species (*hirsuta* Alex., *pervicax* Alex., et al.).

Paracladura Brun. (p. 502), a valid genus and a very primitive one but not at all related to the American *Cladura* as stated.

Claduroides Brun. (p. 505), a strict synonym of *Rhaphidolabis* Osten Sacken, which belongs in a totally different tribe.

¹Contribution from the Entomological Laboratory of Cornell University.

The following observations on certain of the species may be of value to workers on the Oriental fauna. They represent merely the personal opinions of the writer and whether these are right or wrong may be ascertained from an examination of the types.

Dicranomyia ornatipes Brun. (p. 380) is almost certainly an Eriopterine belonging to the subgenus *Leiponeura* Skuse of *Gonomyia* Meigen. A study of the genitalia of the type would settle the matter. The author merely remarks, "Genitalia yellowish brown, small, concealed, apparently normal."

Toxorhina incerta Brun. (p. 422). Brunetti states that there is no mention of an open discal cell in any of the living *Toxorhinæ*. *T. muliebris* O. S. of the eastern United States normally has this cell open as shown by Needham (23d Rept. N. Y. State Ent., pl. 29, fig. 5) whose figure is cited by Brunetti! Moreover, on the page immediately preceding Brunetti states that *muliebris* has the discal cell coalescent with the second posterior. In such cases it is difficult to make out just what the author is attempting to discuss. The remarkable venation of *T. incerta* as shown twice in this volume is almost certainly an abnormality of the type.

Erioptera brevior Brun. (p. 452) and *Empeda inconspicua* Brun. (p. 475). In a recent article (Proc. U. S. Nat. Mus., vol. 44, p. 512) I relegated *Empeda* Osten Sacken to a subgenus of *Erioptera* Meigen and hesitated a long time before allowing it to stand at all. On plate 9, figure 2, Brunetti figures the *Erioptera* and in figure 10 the *Empeda*, and there is not one single point of difference between the two other than slight specific characters. *Empeda* is merely an *Erioptera* in which the fusion of R_{2+3} is a little longer than usual.

Gnophomyia Osten Sacken (p. 487). When we come to examine the species that the author has placed in this genus we are strongly reminded of the work of Walker or Philippi of a half century ago. By means of the author's own keys in this volume it would be impossible to run most of the species down to this genus or even to this tribe!

G. longipennis Brun. (p. 489) is a *Rhaphidolabis* and probably the same species as *Claduroides* and *Rhaphidolabis fascipennis*.

G. genitalis Brun. (p. 490) and *G. furcata* Brun. (p. 491) probably *Limnophila* but certainly not *Gnophomyia*.

G. aperta Brun. (p. 492) is a *Rhaphidolabis*.

G. incompleta Brun. (p. 493) equals a *Plectromyia* Osten Sacken, but this, in turn, should be relegated to the synonymy of *Rhaphidolabis*.

The lack of cell M_1 is not a generic character since it occurs in various species in genera of many tribes (*Limnophila*, *Polymera*, *Eriocera*, etc.).

G. nigra Brun. (p. 494) stated in a long text discussion to lack the radial crossvein, but this is very clearly shown in the figure (pl. 10, fig. 3).

Cladura flavescens Brun. (p. 501) is very probably a *Limnophilina*, strongly suggesting *Adelphomyia* Bergroth.

Claduroides fascipennis Brun. (p. 505), *Rhaphidolabis fascipennis* Brun. (p. 519), and *Gnophomyia longipennis* Brun. (p. 489) are almost certainly one and the same species.

AN ADDITIONAL NOTE ON CALYPTOCOME

By HARRISON G. DYAR

Calyptocome purpurissata Grote.

Mr. J. A. Grossbeck has kindly sent me for examination a specimen from Florida labeled "*Scelolophia purpurissata* Grote = *formosa* Hulst." The specimen is a male *pannaria* Guenée, a little more purplish than Central American specimens, as is usual. My own single ♀ of *purpurissata* is very fresh, not having been relaxed, and its bright color may be due to its freshness. If Mr. Grossbeck's labels are correct, *purpurissata* will return to the synonymy of *pannaria* and be accompanied by *formosa* Hulst, while the name *Scelolophia* Hulst antedates *Calyptocome* Warren.

Calyptocome crossii Hulst.

Eois crossii Hulst, Can. Ent., xxxii, 105, 1900.

Mr. Grossbeck sent me also a ♀ from Fort Myers, Florida, labeled "*Scelolophia crossii* Hulst, comp. type." It is a dark purple species, the wings all purplish shaded below, the lines dark yellow and broken into separated segments, the discal bars light and distinct. It looks like the dark form of *variabilis* Dyar, without the tendency to lightening of the ground. Being a female, it cannot be exactly placed.

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A NEW CUBAN CHAOBORUS

(*Diptera, Culicidæ*)

By FREDERICK KNAB

Chaoborus antillum, new species.

General coloration very pale yellowish, the mesonotum marked with pale brown, the legs with many narrow brown rings, the wings with an indistinct pale brown fascia on the outer third and trace of another on basal third.

Male: Proboscis and palpi pale brown. Antennæ plumose, the joints subcylindrical, elongate, white, with narrow black rings at the insertions of the hair-whorls; hairs of whorls very long, moderately abundant, pale.

Mesonotum creamy yellow; two closely approximated longitudinal convex brownish fasciæ on the anterior two-thirds of the disc, a pair of much broader but less distinct brownish fasciæ on the posterior half, situated well outward toward the lateral margins; some pale brown cloudings at sides of antescutellar space and at sides of anterior fasciæ; setæ long and coarse, pale. Prothoracic region light yellow. Scutellum pale, with a marginal row of very long pale setæ. Postnotum light brown, pale at the sides, nude. Pleuræ pale, marked with dark brown.

Abdomen elongate, depressed; pale yellowish, with numerous coarse yellowish hairs, particularly at the sides, very long ones on the claspers.

Wings rather narrow, hyaline, clouded with brown at the forking of the fifth vein and beyond the cross-veins, the latter cloud forming a wavy indistinct band across the wing; scales hair-like, ocher yellow in the costal region, the others pale except over the integumental cloudings, where they are darker; fringe long, pale. Halteres whitish.

Legs coarsely hairy throughout; pale, the femora and tibiæ with a

series of dark brown rings; tarsi with narrow, ill-defined brown apical rings.

Length: Body, about 2.5 mm.; wing, 2 mm.

San Antonio de los Baños, Cuba (J. H. Pazos). One male.

Type, Cat. No. 16253, U. S. Nat. Mus.

A NEW SPECIES OF AMPHIBOLIPS

(*Hymenoptera, Cynipidæ*)

By WILLIAM BEUTENMÜLLER

Amphibolips montana, new species.

Female: Head dark red, rugose with large pit-like punctures on the cheeks and vertex. Antennæ 16-jointed, first joint stout, much broader at the top than at the base, second joint half as long as the first, third as long as the first and second together, fourth half as long as the third, following joints short, about the size of the second, last joint longer. Thorax black minutely granulated or shagreened with large pit-like punctures anteriorly, posteriorly, and along each side of the parapsidal grooves as well as along the extreme sides. Parapsidal grooves narrow and sharply defined, divergent at the collar, thence inwardly oblique to the scutellum, where they are widely apart. Anterior parallel lines long but not extending to the middle of the thorax. Median groove continuous and sharply defined, but not so much as the parapsides. Lateral grooves long and deep. Pleuræ coarsely aciculated with an opaque, minutely aciculated patch. Scutellum very coarsely rugose with two very large and deep foveæ at the base separated by a smooth carina. Mesonotum rugose, densely covered with short yellowish white hairs. Abdomen globose, well rounded dorsally, brown, second segment blackish brown, microscopically punctate, shining and with a basal patch of pale hairs on each side of the second segment. Legs brown, last pair darker. Coxæ covered with yellowish white hairs. Wings yellowish hyaline, veins heavy and dark brown; radial arc broad and open at the costal margin; cubitus almost touching the first cross-vein; areolet large; second cross-vein curved outwardly; anal vein broken. Length, 4 mm.

Habitat: Summit of Mount Graybeard, Blue Ridge, North Carolina. Altitude, 5,000 feet.

A strange and aberrant species easily known from its congeners by the

finely shagreened thorax with pit-like puncture, sharply defined grooves, and the 15-jointed antennæ. The male is not known. Described from a single female taken May 26, 1912. The gall probably occurs on red oak (*Quercus rubra*) which grows in abundance on the summit of the mountains.

ON THE LARVAL HABITS OF TWO SPECIES OF OLIGIA

(*Lepidoptera, Noctuidæ*)

By HENRY BIRD

Attention may be called to the sedge-boring habit of the larvæ of two *Oligia* species, and others likely have similar traits. As these moths are rather rare, or not well shown in collections, a wider acquaintance may be secured through knowledge of the food habit, and they can be readily reared. Both are single brooded, and are easily found at a proper date.

***Oligia diversicolor* Morrison.**

Mature larva : Rather robust for a borer, color straw yellow shaded with pink dorsally ; head small, brown, darkened at ocelli and mouth parts, setæ seem wanting, width 1.8 mm. ; joint 1 scarcely wider than head, covered dorsally by cephalic plate of concolorous body hue, plate is grooved on anterior edge and bears usual setæ, the feet are reduced and the joint is usually retracted in segment 2, its spiracle is larger than those on the middle abdominal segments ; preceding the spiracle is a prominent tubercular plate without seta ; joints 2 and 3 are swollen to the full diameter of the succeeding rings ; joints 12 and 13 again taper to the small size of the head ; anal, and preceding plate on 12 large, concolorous ; on joint 11 the spiracle is raised a little and enlarged to twice the size of the others ; all spiracles black ; tubercles and setæ concolorous, weak, and indiscernible without a lens. Length, 31 mm. ; greatest width, 5 mm.

Distinguishing features with this larva are the aborted or reduced size of joint 1 and the enlarged spiracle on 11. Food plant *Scripus cyperinus*, and occasionally other stout sedges. Maturity is reached July 20-30, after a larval period of apparently 45 days, and the moths emerge a month later. Pupation is in the ground, and the pupa is normal. The larva works head downward at the base of the stem and finishes down

at the crown, being tightly jammed at all times in the burrow. The boring is not more than 7 centimeters in length, and the wet situations in which the food plant flourishes make the question of air supply important. Thus the modified posterior spiracles show how this pair have come to meet a special function.

***Oligia includens* Walker.**

Mature larva: Very cylindrical, colors dull, pale, purplish brown, indistinct lines whitish as are the anterior and posterior joints ventrally, the first four abdominal rings show fully darkened, giving the girdled appearance of *Papaipema*, except that it is less pronounced; head polished, pale yellow, setæ exceedingly minute, width 0.8 mm.; cephalic plate pale, same width, marked at side with black border; anal plate less pronounced; a prominent tubercular plate precedes the spiracle on joint 1; conventional tubercles very weak; spiracles on joint 11 slightly largest, all black; a thread-like dorsal and a similar, though double, subdorsal line is continuously traceable; length, 22 mm.; width, 2 mm. Maturity is reached June 5-12, after an estimated larval period of 20 days. Moths emerge July 2-7; pupation is in the ground, and the pupa is normal. Food plant, *Carex stricta*.

This is found to be a very commonly diffused species when food plant indications are followed. The concentrated appearance of the moths and their short period of flight account for their paucity in collections, apparently. A sexual divergence, and a variation more common to the female, may explain the synonymical misconceptions.

The two larvæ herein treated seem in no way naturally associated.

A NEW ANDRICUS FROM NEW JERSEY

(*Hymenoptera*, *Cynipidæ*)

By WILLIAM BEUTENMÜLLER

***Andricus flavohirtus*, new species.**

Female: Head light brown, minutely punctate, face and cheeks densely covered with silky yellowish hairs, eyes black. Antennæ yellowish brown, 13-jointed, third, fourth, fifth, and sixth joints longer than the others and of equal length, following joints shorter and subequal, last joint longer. Thorax light brown, finely punctate and covered with decum-

bent yellow hairs; anterior parallel lines and lateral grooves black. Parapsidal grooves very narrow and continuous. Anterior parallel lines extending to the middle of the thorax. Lateral grooves long and sharply defined. Scutellum color of the thorax, finely rugose, with two smooth, oblique foveæ at the base. Pleuræ minutely aciculate, with a large smooth, polished area, darker in color. Abdomen smooth red brown becoming darker terminally. Legs pale yellowish brown, last pair darker. Wings hyaline, veins yellowish brown, radial area almost closed, cubitus continuous, areolet large. Length, 3 mm.

Gall: On the terminal twigs of swamp white oak (*Quercus platanoi-des*) early in June. Monothalamous, globular, and thin-shelled, containing no separated larval chamber. Green when fresh, brown or gray when old. It is embedded in a cluster of short, lanceolate, aborted leaflets, more or less concealing the gall. When mature it drops to the ground, leaving the bunch of leaflets on the twig. Diameter, 3 mm.

Habitat: Fort Lee, New Jersey. (Type, coll. W. B.)

A pretty species readily known by its light brown color, black anterior parallel lines and lateral grooves, and yellow, silky hairs on the head and thorax. Described from a single female.

NOTES ON THE SPECIES OF GALASA WALKER

(*Lepidoptera, Pyralide*)

By HARRISON G. DYAR

Walker founded the genus *Galasa* (Cat. Brit. Mus., Lep. Het., xxxv, 1801, 1866) for one species, *G. rubidana* Walk. from Jamaica. Sir G. F. Hampson recognized but this one species (Proc. Zool. Soc. Lond., 694, 1897), mentioning also *G. daulialis* Druce as unknown to him; but from the figure it can have nothing to do with *Galasa*. However, under *Caphys* he places another species, *C. palmipes* Felder and Rogenhofer, which agrees with *Galasa* superficially, while I have still another species, *caustalis*, which Hampson places in *Uliosoma*, according to labels by Mr. Wm. Schaus. The facts are, I believe, that *Galasa* varies among the species in venation to a marked and unusual degree, while all of the other characters, including the coloration, are decidedly uniform and stable. The venation seems constant enough, species by species, but taken as a whole shows a wide range. In Hampson's table of the

Chrysauginæ (Proc. Zool. Soc. Lond., 636-640, 1897) it will be necessary to enter the name in several places. I separate the species that are before me as follows. The males have two indentations on the costa; the females a single broad emargination.

Hind wing with vein 3 present; 2, 3 from the cell, 4, 5 connate or stalked.

Fore wing with vein 3 present.

Fore wing with veins 2 and 3 stalked.

Fore wing with veins 4 and 5 stalked.

Hind wing uniform fuscous, subtranslucent.

Fore wing with the lines obsolete; larger species.

lophopalis Dyar

Fore wing with the inner line forming a white angle on vein 1.

monitorialis Dyar

Hind wing straw-whitish at base . . . *subpallidalis* Dyar

Fore wing with veins 4 and 5 separate.

Hind wing with veins 4 and 5 stalked.

Fore wing brown, the veins black-streaked.

striginervialis Hampson

Fore wing yellow on costa, purple on inner margin.

fervidalis Dyar

Hind wing with veins 4 and 5 separate . . . *rubidana* Walker

Fore wing with veins 2 and 3 separate.

Fore wing with vein 3 from the cell; purplish brown; hind wing not darker . . . *vulgalis* Dyar

Fore wing with vein 3 stalked with 4 and 5; tan-brown; hind wing darker . . . *lutealis* Dyar

Fore wing with vein 3 absent, 4 and 5 stalked . . . *belliculalis* Dyar

Hind wing with vein 3 absent, 2 from the cell, 4-5 connate or stalked.

Fore wing with vein 4 present.

Hind wing with vein 5 close to 4, but separate from it and from median stem.

Fore wing in ♂ with vein 3 from cell or close to it, vein 8 absent; in

♀ vein 3 stalked with 4-5, vein 8 present.

Bright red-brown, the costa shading a little paler, rusty orange.

strenualis Dyar

Rosy or purplish fuscous, uniform.

Lines densely dotted, white, preceded by black; general tone somewhat luteous . . . *modestalis* Dyar

Lines sparsely dotted, without black; general tone rosy, without luteous . . . *unifactalis* Dyar

Costa purple-red, the rest of the wing fuscous-black . . . *costalis* Dyar

Entire wing fuscous-blackish . . . *stygalis* Dyar

Hind wing with vein 5 stalked with 4 and united to median stem; fore wing with vein 3 stalked with 4-5 in both sexes, vein 8 absent in the ♂, present in the ♀.

Purplish brown, the veins and inner third of fore wing fuscous.

concordalis Dyar

Purplish tan-brown, powdered with fuscous, the lines double, fuscous, showing areas of ground color between the components.

relativialis Dyar

Straw-color, scarcely purplish tinted, with black powderings on the veins in the cell; lines pale, without dark edges . . . *pallidalis* Dyar

Fore wing with vein 4 absent.

Fore wing with veins 2 and 3 stalked . . . *rugosalis* Dyar

Fore wing with veins 2 and 3 not separately stalked.

Hind wing with vein 5 close to 4, separate from it and from media; fore wing with veins 3 and 5 stalked in both sexes, 8 absent in the ♂, present in the ♀.

Fore wing purplish, with black along the inner margin.

Hind wing of ♂ pale over the disk . . . *caustalis* Hampson

Hind wing of ♂ fuscous-black . . . *dubitalis* Dyar

Fore wing fuscous-black . . . *stygielis* Dyar, var.

Hind wing with vein 5 stalked with 4; fore wing with veins 2, 4, and 5 stalked, 8 absent in the ♂, 10 stalked . . . *dilirialis* Dyar

Of the new species in the foregoing table, fuller mention will be made of *monitoralis*, *subpallidalis*, *fervidalis*, *lophopalis*, *belliculalis*, *lutealis*, *strenualis*, *stygielis*, *relativialis*, *pallidalis*, *dubitalis*, and *dilirialis* in my report on the Smithsonian expedition to Panama, now in preparation, of *unifactalis* in my fourth Mexican paper, while the descriptions of *striginervialis* and *caustalis* appeared in the Annals and Magazine of Natural History, (7), xvii, 200-201, 1906.

***Galasa vulgaris*, new species.**

Fore wing dull purplish, almost without markings; the lines show only as traces, darker, curved, remote; a straw-whitish narrow terminal line, indented inwardly on the veins; some gray scales along the costa in the emargination. Hind wing fuscous, rather pale at base and inner area. Expanse, 18 mm.

Type, ♀, No. 16256, U. S. Nat. Mus.; São Paulo, Brazil (Schaus collection).

***Galasa modestalis*, new species.**

Fore wing dull purplish, slightly luteous shaded, the costa slightly redder; lines slender, composed of white dots on the veins, dense and sub-

confluent, the inner irregularly curved, the outer gently excurved; terminal pale line very narrow. Hind wing subtranslucent fuscous, uniform. Expanse, ♂, 13 mm.; ♀, 15 mm.

Cotypes, ♂ and ♀, No. 16257, U. S. Nat. Mus.; St. Jean, Maroni River, French Guiana, March, 1904 (W. Schaus).

Galasa costalis, new species.

Fore wing purple-red on costal third, the rest dark fuscous; lines composed of white dots on the veins, rather close and giving a continuous effect; terminal pale line very narrow; emargination of costa slight. Hind wing subtranslucent fuscous. Expanse, 14–16 mm.

Cotypes, six ♀ ♀, No. 16258, U. S. Nat. Mus.; Sixola River, Costa Rica, March and September (W. Schaus); Tuis, Costa Rica, May (W. Schaus); Esperanza, Costa Rica, May (W. Schaus).

The specimens are all identified as *Caphys palmipes* Feld., but see my remarks under that heading below.

Galasa concordalis, new species.

Fore wing dull purplish, almost without markings, the veins darker; traces of both lines near inner margin as white streaks or dashes; terminal pale line faint, dotted; some gray scales on costa at the two incisions. Hind wing soiled whitish, shading to fuscous on the margin and costa. Expanse, 15 mm.

Type, ♂, No. 16259, U. S. Nat. Mus.; São Paulo, Brazil (Schaus collection).

Very much like *G. vulgaris*, described above, but sufficiently distinct by the venation.

The specimen is labeled "*Caphys palmipes* Feld., fide B. M."

Galasa rugosalis, new species.

Purplish powdered over luteous, the veins strongly lined in black; heavier dark markings on the basal and middle costal lobes and along inner margin; a terminal row of black dots; lines pale, rather broad, the outer quite strongly excurved, the inner irregular. Hind wing fuscous blackish. Expanse, 13 mm.

Type, ♂, No. 16260, U. S. Nat. Mus.; St. Jean, Maroni River, French Guiana, July, 1904 (W. Schaus).

Resembles *G. striginervis* Hampson.

Galasa palmipes Felder and Rogenhofer.

Amblyura ? *palmipes* Felder and Rogenhofer, Reise Novara, pl. 137, fig. 23, 1874.

Caphys palmipes Hampson, Proc. Zool. Soc. Lond., 679, 1897.

A ♂ is figured, large (24 mm.), light red with the lines pale luteous and broad, from the Amazons (Bates). Nothing like it is before me. The specimens from Brazil and Costa Rica in the collection that were labeled with this name are evidently distinct. Unfortunately, nothing is known of the venation of *palmipes*.

NOTE ON HEPIALUS AURATUS GROTE

(*Lepidoptera, Hepialidæ*)

By WILLIAM BEUTENMÜLLER

This fine and rare golden Hepialid was first described by A. R. Grote from an example taken in Lewis County (Adirondack Mountains) by the late W. W. Hill in July, 1877 (Can. Ent., vol. x, p. 18, 1878). Ten years later Mr. E. P. Van Duzee captured a specimen resting on a wild gooseberry bush toward the close of July, while strolling through a cool shady ravine at Lancaster, near Buffalo, New York (Can. Ent., vol. xx, p. 100, 1888), and five years later Mrs. A. T. Slosson recorded the capture of a specimen taken by her at Lonesome Lake, in the Franconia Mountains, New Hampshire, about 3,000 feet above the sea. She caught her golden prize early in July in the twilight after the sun had gone down (Can. Ent., vol. xxv, p. 260, 1893). Mr. G. Chagnon recorded taking a specimen of *auratus* at St. Theresa Island about 3 miles from St. Johns, Quebec, Canada, and another taken by Dr. Fyles in Bromo County, Quebec, in July, 1865 (Can. Ent., vol. xlv, p. 34, 1913). Mr. R. F. Pearsall informs me that he captured two males in the Catskill Mountains, New York, during July, and these are probably the specimens referred to in the Bulletin of the Brooklyn Entomological Society, vol. viii, p. 61, 1913. While in camp on the summit of the Black Mountains in western North Carolina at an elevation of 6,710 feet, I caught on June 22, 1911, a fine pair of *auratus*. My specimens were taken in a clearing in the balsam forest just before dark, fluttering around a small trickling spring. This is the most southern record known for

auratus and the distribution of the species now stands as follows: Canada (Quebec), northern New York (Lancaster), Adirondack and Catskill Mountains, New York, Franconia Mountains, New Hampshire, and Black Mountains, North Carolina.

A NEW EMPID FROM THE BLACK MOUNTAINS, NORTH CAROLINA

(*Diptera, Empididae*)

By WILLIAM BEUTENMÜLLER

***Rhamphomyia novecarolina*, sp. nov.**

Male: Head black, covered with grayish white pollen, eyes contiguous, umber brown. Antennæ black, third joint stout, gradually tapering to the apex, style very small and thin. Palpi long, about twice as long as the head. Thorax black, densely covered with grayish white pollen, pile long, moderately abundant, and glistening whitish in color. Pleuræ blackish, pruinose. Scutellum same color as the thorax, as are also the bristles. Abdomen very densely covered with whitish pollen, completely covering the black ground color, and contrasting with the thorax; anal appendages dark brown black. Legs brown with whitish hairs, metatarsi pale, hind metatarsi swollen. Halteres sordid white. Wings milky white with a pearly lustre, fourth longitudinal vein not abbreviated. Length, 3 mm.

Habitat: Summit of the Black Mountains, North Carolina. Altitude, 5,000–6,500 feet.

This pretty little empid flies in swarms of several hundred or more in the dense dark balsam forests which cover the summit of the mountains. It flies in places where the sun penetrates through the foliage and dances merrily up and down or to and fro. With its white color, greatly contrasting with the surrounding dark forest, the swarms look like flakes of fine snow. It may be easily taken and a single sweep of the net will yield many specimens, all depending upon the size of the swarm. The species comes in the group with *umbilicata*, *soccata*, etc., which are characteristic by their whitish wings, pale pubescence, large pulvits, etc. The present species is distinct in having the fourth longitudinal vein not abbreviated and the hind metatarsi swollen. The female does not differ in color from the male.

DESCRIPTION OF A NEW GALLFLY (ANDRICUS DECIDUA)

(Hymenoptera, Cynipidæ)

By WILLIAM BEUTENMÜLLER

Andricus decidua, new species.

Cynips q. decidua Bassett, Proc. Ent. Soc. Phila., vol. iii, p. 689, 1864.

Cynips ? decidua Ashmead, Trans. Am. Ent. Soc., vol. xiv, p. 127, 1887.

Cynips decidua Felt, Ins. Affect. Park and Woodl. Trees, p. 627, 1906.

Female: Head yellowish brown, vertex and posterior part blackish. Antennæ 14-jointed, basal joints brown, others much darker, long and extending backward to the middle of the abdomen. Thorax jet black, highly polished and smooth, microscopically punctate on each side anteriorly. Parapsidal grooves sharp and deep, continuous, parallel, suddenly converging at the scutellum where they are close together. Anterior parallel lines very fine and short. Median line scarcely evident, except by transmitted light. Lateral grooves fine and short. Collar and pleuræ punctate, the latter with a small, smooth, polished area. Scutellum black, smooth and shining, gradually becoming rugose toward the apex from beyond the middle, and with two large smooth foveæ at the base, separated by a very fine carina. The scutellum is narrowly margined and is narrower at the base than apically. Abdomen compressed, sides slightly rounded and sharply keeled above and below, sheath of ovipositor very long, club-shaped and not extending beyond the shorter anal projection. Legs pale yellowish brown. Wings hyaline; radial area broad and closed; areolet small and triangular; cubitus almost continuous. Length, 2 mm.

Gall: On the midribs of the leaves of red oak (*Quercus rubra*) and black oak (*Q. velutina*). Rounded or elongated swellings filled with oblong kernels from a few to about 40, all depending upon the size of the gall. When young these bodies are concealed in the hard, fleshy part of the gall and as the swelling grows older the seed-like kernels gradually protrude therefrom and when fully grown late in September and early in October the swelling bursts open completely and the kernels fall to the ground. The gall is green when fresh and the kernels are whitish, yellowish, sometimes tinged after they become exposed.

Habitat: New England States, Middle States, and southward to at least North Carolina and westward.

This singular species was hitherto known by the gall only. It is very distinct and characteristic and may be known by the form of the scutellum, compressed and sharply keeled abdomen, and the highly polished thorax with parallel parapsidal grooves. Described from a single female from the Black Mountains, North Carolina, altitude 3,500 feet. The gall is quite common, but the imago is difficult to raise.

A NEW OAK GALL FROM MEXICO

(Hymenoptera, Cynipidæ)

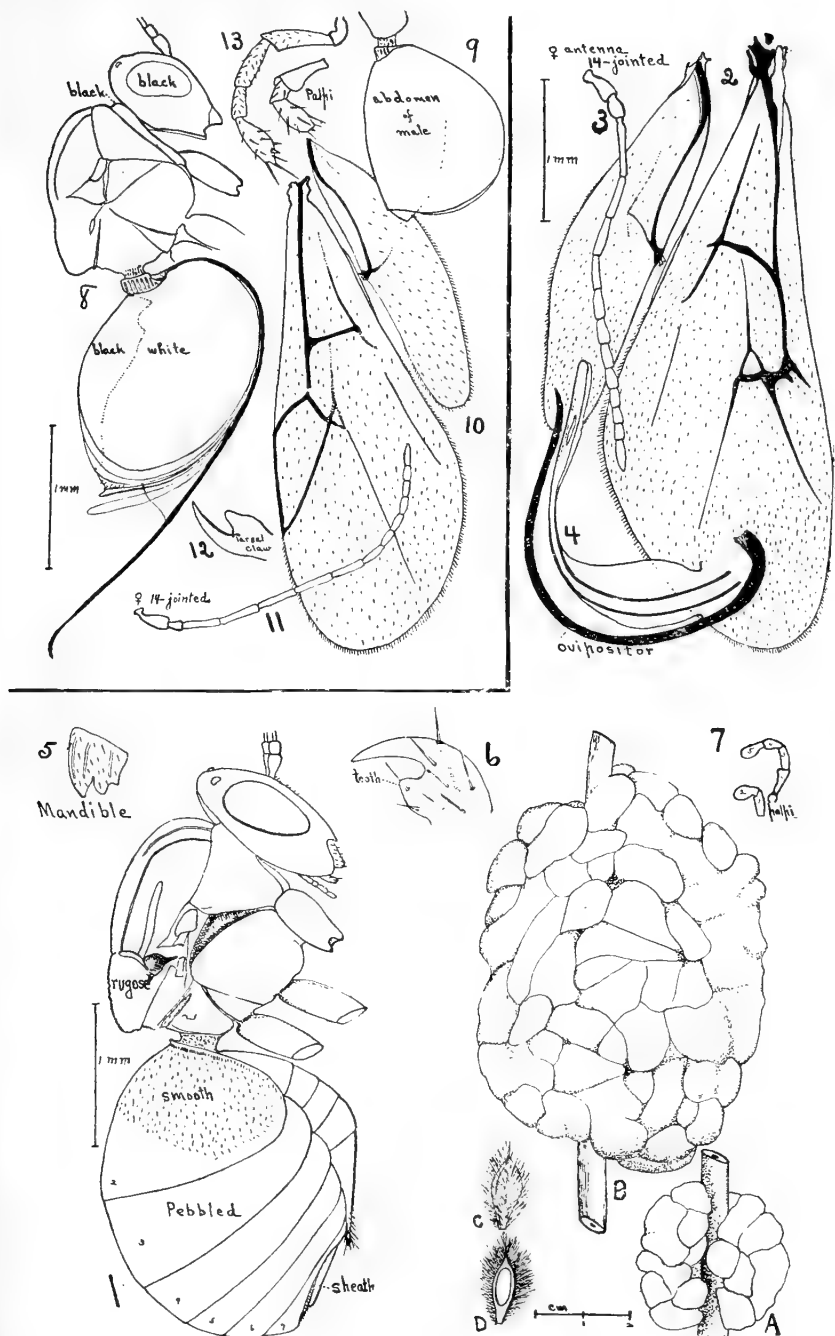
By LEWIS H. WELD

Late in December, 1911, Mrs. Dwight Furness, of Guadalajara, Mexico, sent me some white woolly galls tinged with pink on oak twigs and resembling those of *Callirhytis seminator* Harris. They came from Tarecuato, in the State of Michoacan. One of these galls is represented in figure A. A distinctly marked black and white species of *Synergus* began to issue January 5, 1912, and continued until after February 1.

On April 7, 1912, I received from Mrs. Furness another box of similar galls but so much larger that I at first thought they must be a different species. These were almost pure white. See figure B. They are probably full-grown specimens of the same species, and from these a *Callirhytis* began to issue April 20 and continued to emerge until May 20, 1912, coming out in greatest numbers the last week in April. On June 1, 1912, more of the same species of *Synergus* mentioned above began to emerge, males and females, coming out at intervals until late in December, 1912. Both species are probably new.

Host: An unknown species of oak, probably of the white oak group, and the one common to high altitudes on the western slope of the central plateau of Mexico:

Gall: Large woolly mass nearly or quite encircling twigs 5 mm. or less in diameter. When full grown the largest specimen measured 85 mm. long by 60 mm. in diameter. Each mass is made up of separate elements, from a few to over 150 in number, each of which contains a single larval cavity and each of which is covered with a dense coating of long white wool as in *C. seminator*. But the elements of this gall are quite different from those, being rhomboidal in outline instead of round spindle-shaped, variously distorted by pressure so that no two are alike; they are not prolonged at apex into a long slender spine which bears the hairs as



EXPLANATION OF PLATE

A. Partly grown gall of *Callirhytis furnessae* Weld.

B. Full grown specimen—the type gall. 85 mm. long, 60 mm. in diameter.

C and D. Single elements of above.

Fig. 1. Lateral view of female.

Fig. 2. Fore and hind wing.

Fig. 3. Antenna.

Fig. 4. Ovipositor.

Figs. 5, 6, 7. Mandible, hind tarsal claw, and palpi, much more greatly magnified.

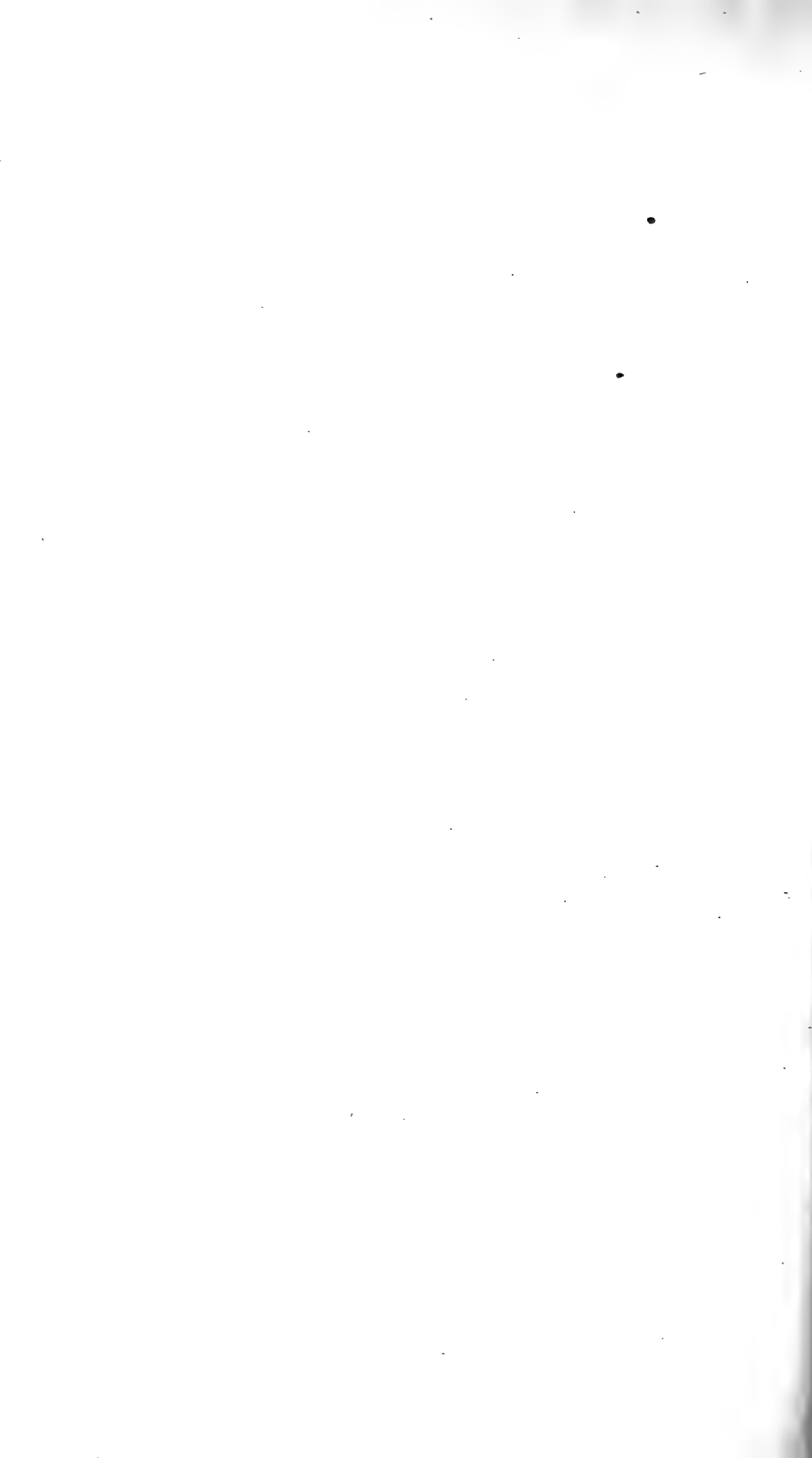
Fig. 8. Side view of female of *Synergus furnessana* Weld.

Fig. 9. Abdomen of male.

Fig. 10. Wings.

Fig. 11. Antenna of female.

Figs. 12 and 13. Tarsal claw and palpi, much more greatly magnified.



in *seminator* but these are hairy to the base; the wall is more woody and thicker instead of a mere shell. See figures C and D.

This is probably the same gall collected by Silvestri at Jalapa, Mexico, in 1908 and described by Trotter under the name "*? Callirhytis* sp." in *Boll. Laboro. Zool. Portici* 5: 127, Tav. I, figs. 7-8, 1910; *Marcellia* 10: 55, Tav. I, figs. 7-8, 1911.

***Callirhytis furnessæ*, new species. (Pl. IV, figs. 1-7.)**

Female: Length, 3.2-3.8 mm. Robust. Body uniformly rich brown. Head as broad as thorax, finely rugose, covered with scattered white hairs, more prominent below antennæ and on mandibles and occiput. Labrum distinctly impressed. Palpi honey-yellow, labial 2-jointed, maxillary 5-jointed. Antennæ arising on level with middle of compound eyes, 14-jointed, reaching about to middle of abdomen, first two joints stout and honey-yellow, the rest darker, third long and slender and then successively shorter to the thirteenth, fourteenth about twice as long as penultimate and acuminate. Whole thorax hairy except dorsal part of mesonotum. Pronotum longitudinally ridged laterally. Mesopleuræ shagreened and less hairy. Mesonotum with a pebbled surface, becoming rugose at margin. Parapsidal furrows complete. Two smoothish lines from pronotum back about halfway and between them in place of a median furrow the surface is slightly rugose, becoming a distinct furrow close to scutellum. Two broad, still smoother, and almost shining lines extend forward between the parapsides and bases of the wings. Scutellum coarsely rugose and hairy with two banana-shaped confluent foveæ at base, separated from sutural groove in front by a narrow ridge. A V-shaped impression above hind wing, hairy, and so are lateral impressions in metathorax and so is the median segment except for an impressed area above petiole. Legs light brown with all coxæ and empodia infuscated and the tibiæ and tarsi of hind pair. Wings hyaline, ciliated, pubescent. Subcosta, first and second abscissa of radius, basal, and vein at distal margin of areolet heavy, others lighter. Radial cell open. Abdomen finely pebbled except the anterior part of second segment, which is smooth and hairy. Rest bare, except a few hairs on last segment about the sheath and a dozen or so long ones on ventral spine.

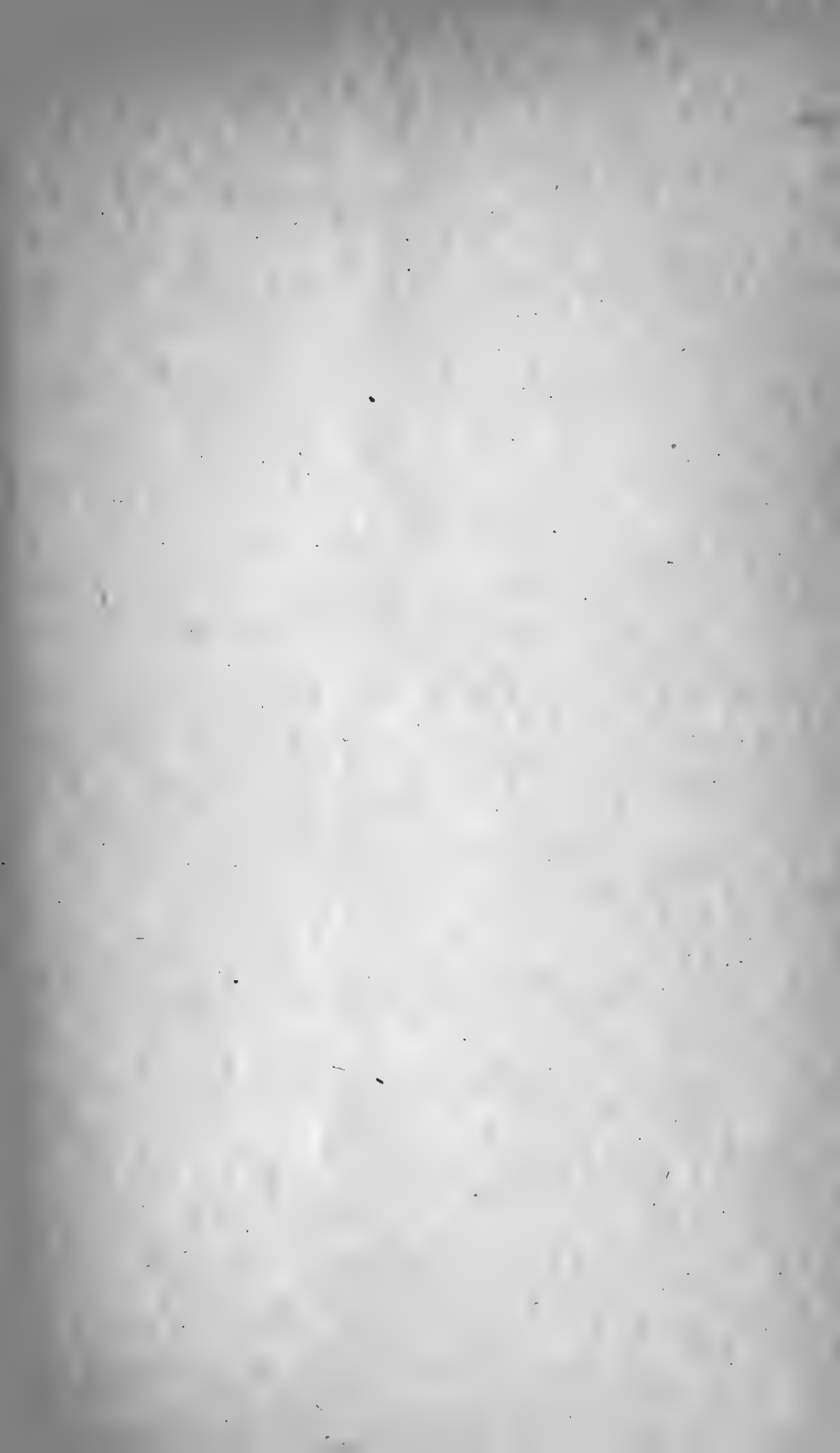
Types of this and the following with Am. Ent. Soc.; paratype galls, flies, and photograph of the type gall are deposited in the following collections: U. S. Nat. Mus.; Harvard Mus. Comp. Anat.; Field Mus.; British Mus.; Cornell Univ.; Wm. Beutenmüller; and L. H. Weld.

Synergus furnessana, new species. (Pl. IV, figs. 8-13.)

Female: Length, 2-3.6 mm. Average of 30 specimens was 3.1 mm. Black and white. Head slightly broader than thorax. Compound eyes, inner margin of mandibles, and a broad area on vertex reaching down to base of antennæ in front and broadening out on occiput behind (sometimes reduced to a black spot about ocelli and a long curved transverse one on occiput), and ocelli, black. Rest of head white or whitish. Face radiately striate, rest of head coriaceous and slightly pubescent with short white hairs. Mandible 3-toothed, labial palpi 2, maxillary 5-jointed. Antennæ filiform, 14-jointed; first two joints stouter and white, the rest a little darker, joints 3-5 slender, long, and equal, 6-13 progressively shorter, last nearly twice as long as penultimate and acuminate. Joints 4 to end with longitudinal grooves with clear spot in center of each. Thorax black below and varying from white to very dark in different individuals above, rugose, covered with short white hairs. Proepisternum, metathorax, median segment, and band along anterior margin of pronotum always black. Mesopleuræ longitudinally ridged, crossed by a broad lighter band. Mesonotum and scutellum white to nearly black. Parapsidal grooves complete, slightly diverging in front, anterior lines short and faint, median and lateral wanting. Scutellum more coarsely rugose with two shallow pear-shaped foveæ at base, the large ends not quite confluent in the center. Legs including coxæ white, but tibiæ and tarsi darker, nearly black in the last pair. Tarsal claws with tooth at base. Wings hyaline, hairy, radial cell closed, areolet and basal half of cubitus rather indistinct. Abdomen larger than head and thorax together, laterally compressed, white with a very conspicuous and constant median dorsal black band, extending from near tip of abdomen to the collar, broader anteriorly and with an indentation near the front end on ventral margin. Pedicel black and rugose, collar black and longitudinally sulcate. Abdominal segments bare, with a few hairs on last segment near the prominent sheath. Rear third of second and visible part of all the rest inconspicuously punctate. Ovipositor very long.

Male: Head as in female except antennæ are 15-jointed, third joint excised, last acuminate and scarcely longer than penultimate. Thorax and abdomen black. Legs including coxæ white, tibiæ and tarsi darker, especially in hind pair. Abdomen shorter than head and thorax combined, smooth and shining, almost entirely occupied by second segment.

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Vol. I

NOVEMBER, 1913

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Vol. I

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No. 11

A NEW AMERICAN PHLEBOTOMUS

(*Diptera, Psychodidæ*)

By FREDERICK KNAB

The *Phlebotomus* described in the following was sent by Prof. F. W. Urich with the information that it is of economic importance, occurring associated with man. Were it not for this fact, I should have refrained from describing another species in a group which is very difficult, and, at least for America, poorly elucidated. I can indorse the statements of Drs. Lutz and Neiva relative to the difficulties in determining the characters of palpal structures introduced by them. In none of the five specimens of the new species before me are the palpi in such a position that the relative lengths of joints can be determined accurately. An objectionable character, the relative length of head and body, has been introduced by Sophia L. M. Summers. The body necessarily varies greatly in length, according to whether the abdomen is contracted or distended, and unless this is kept in mind students will easily fall into error.

Phlebotomus atroclavatus, new species.

Head, abdomen, and dorsum of thorax dull brown, the pleuræ and coxæ pale yellowish; vestiture dull brown with slight bronzy luster, on the tibiæ and tarsi shading off into whitish.

Female: Head including proboscis distinctly less than half the length of the body. Frons brown, the region about the antennæ, and the basal joint of these, yellowish. Clypeus slightly shorter than the rest of the head, dark brown, shining, with long erect hairs on the dorsum; proboscis projecting beyond slightly more than the length of the clypeus. Palpi exceeding the proboscis by about half their own length, the last joint very long and slender, more than twice the length of the preceding one.

Thorax without scales. Mesonotum, scutellum, and postnotum dull brown, all with long erect hair; prothoracic lobes, pleuræ, and coxæ very pale.

Abdomen dull brown, without scales, clothed with long recumbent brown hairs, densest at the sides and beneath, somewhat raised toward the tip of the body and concealing the terminal parts; dorsally each segment with tufts of long erect hairs, densest and coarsest on the second segment.

Wings limpid, nearly colorless; about three and one-half times as long as wide (without including fringe); first vein ending in the costa before the middle of the second marginal cell; distance from the furcation of the second vein to the furcation of its upper branch about half as long as the uppermost branch.

Halteres with large black knobs.

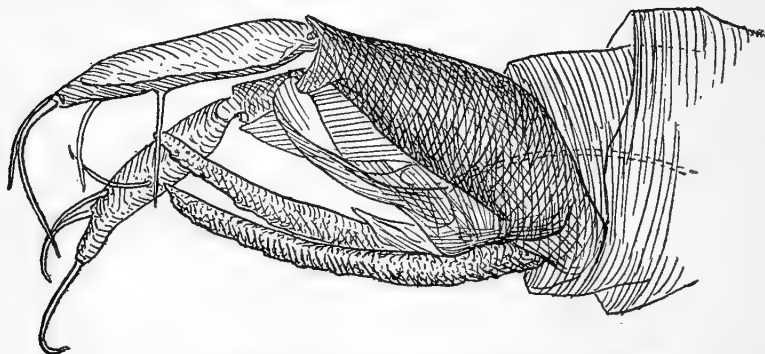


Fig. 1.—*Phlebotomus atroclavatus* Knab. Male genitalia.

Legs slender, brownish, covered with scales, brownish on the basal portions, but with a strong whitish luster on the outer part of the tibiæ and particularly on the tarsi. Proportions of tibia and tarsal joints of hind legs: 36; 19, 10, 6.5, 5, 3.

Length: Body about 1.3 mm., wing 1.75 mm.

Male: This sex differs in the usual sexual characters and the slightly smaller size. The genitalia are similar to those of other American species but differ in details of proportion and shape of the parts. The outer joint of the claspers is thickened to near the apical fourth and there are inserted dorsally at this point two long and very stout bristles, one closely behind the other; the apical fourth is attenuated, thumb-like, and bears apically a still longer curved bristle, but little shorter than the segment itself; on the inner surface of the joint, beyond the middle, there is another stout bristle, in addition to the ordinary scattered hairs. The lower gonapo-

physes are long and slender, reaching to beyond the middle of the outer clasp-joint; they are rugose and bear numerous long hairs, but are without differentiated appendages. The measurements are: Outer joint of claspers 19, lower gonapophyses 23.

Length of body, without appendages, about 1.2 mm., wing 1.4 mm.

Locality: Gasparee Island, Trinidad, August, 1913 (F. W. Urich).

Type: Cat. No. 16850, U. S. Nat. Mus.

Described from two females and one male preserved dry, and a male and female mounted in balsam. One of the females is distended with blood and shows the darker integumental coloring throughout which follows the taking of blood meals.

This species agrees with *Phl. longipalpis* Lutz and Neiva and *Phl. verrucarum* Townsend in the long terminal joint of the palpi; it differs, however, in a number of details and particularly in the structure of the male genitalia.

A NEW GERANOMYIA FROM THE PHILIPPINE ISLANDS¹

(*Diptera, Tipulidæ*)

By CHARLES P. ALEXANDER

In a collection of Philippine Chironomidæ and Culicidæ sent to Dr. O. A. Johannsen by Dr. C. S. Ludlow there was included a peculiar species of *Geranomyia*. Since this insect exhibits many structures that have not been recorded hitherto in this tribe, I am describing the species at this time. It will be figured in a later paper.

The presence of a prominent fleshy horn on the vertex, a rounded tubercle on the anterior margin of the mesonotal præscutum, and the apparent lack of vein *Sc*₂ of the wings at once separates this species off as unusual in the genus. I express my thanks to Dr. Johannsen and Dr. Ludlow for this material.

Geranomyia cornigera, new species.

♂ Length, 4.5–7 mm.; rostrum, additional, 1.6–2.2 mm. Wing, 5.7–7.8 mm.

Rostrum long, rather stout, dark brownish black, each tip ending in a

¹Contribution from the Entomological Department, Cornell University, Ithaca, N. Y.

small pale greenish recurved hook ; palpi apparently 4-segmented, black. Antennæ dark brown. Head light silvery gray with blackish reflections ; a fleshy elongate lobe, black in color, on the vertex, extending cephalad to near the base of the antennæ.

Cervical sclerites and the pronotum dark brown. Mesonotum, præscutum with a small median brown knob on the cephalic margin. Lobes of the scutum dark brown, this color produced anteriorly in a long stripe which continues along the præscutum to the knob described above. Præscutum with a pale brown median stripe which continues back to the transverse suture ; scutum with the median space pale. Scutellum pale yellowish, except a brown mark on the anterior part on either side, this being an elongation of the caudal lobe. Postnotum yellow with a broad transverse brown band. Pleuræ with two conspicuous transverse stripes, the upper one broadest, beginning above the fore coxæ, continuing backward, above the halter, to the postnotum where it fuses with the transverse brown band described above ; a narrower brown band begins on the mesonotum just before the mesocoxæ and continues to the abdomen. Halteres dark brown. Legs, coxæ, and trochanters brownish yellow, femora light brown, tibiæ and tarsi brownish yellow. Wing, veins dark brown, cells C and Sc light brown, remainder of wings hyaline ; narrow pale brown seams along *Rs* and the cross-veins and deflections of veins ; there are three dark brown marks in cell Sc, the first at the base, the third at the tip of vein Sc, the second being midway between the other two and containing a supernumerary cross-vein as is usual in this genus. Venation, Sc ending just beyond the origin of *Rs* ; cross-vein *Sc*₂ not evident ; *Rs* long, about twice as long as the deflection of *R*₄₊₅ ; cell first *M*₂ very long, narrow, quadrangular or nearly so, the basal deflection of *Cu*₁ at its base ; the veins issuing from cell first *M*₂ very short.

Abdomen, tergites dark brown ; basal three or four sternites yellowish darkening into brown on the terminal segments.

Holotype, ♂, Pettit Banks, Philippine Islands, October 23, 1912 (Dr. Ludlow). Paratypes, 7 ♂, with the type, taken at 1 p. m. ; 4 ♂, type locality, between daylight and dark on October 22, 1912.

This species is closest to *G. notata* Meij. of Java in its striped pleuræ ; it differs in the color of the thorax, wings, legs, and structural characters.

A key to the Oriental species of *Geranomyia* is given in Brunetti's Fauna of British India, p. 388, 1912. The East Indian species are considered by de Meijere in Tijdschrift voor Entomologie, vol. 54, p. 31,

1911. Palæarctic species which may be regional are *G. annandalei* Edw. (Jour. and Proc. Asiatic Soc. Bengal (new series), vol. 9, no. 1, pp. 47, 48, 1913) from Palestine and *G. avocetta* Alex. (Can. Ent., vol. 45, no. 7, pp. 205, 206, 1913) from Japan.

A NEW PYRALID FROM NEWFOUNDLAND

(*Lepidoptera, Pyralidæ*)

By HARRISON G. DYAR

Pyrausta beddeci, new species.

Pale straw-color, powdered with smoky brown, the shading a little less intense outwardly; lines dark, somewhat shaded; inner line of fore wing slender, nearly straight, coarsely dentate on the veins; outer line broadly excurved in its middle third, the costal and inner portions somewhat broadened and shaded, the central outcurved portion roundedly denticulate; orbicular and reniform represented by two small points. Hind wing with a single outer line, broadened and shaded throughout, its central portion outcurved, but the general course of the line nearly uniform. Expanse, 23 mm.

Type, male, No. 16842, U. S. Nat. Mus.; Codroy Valley, Newfoundland, July (Maj. E. E. Beddek, late of the British Indian Army).

A NEW NOMARETUS FROM MOUNT MITCHELL, NORTH CAROLINA

(*Coleoptera, Carabidæ*)

By WILLIAM BEUTENMÜLLER

Nomaretus schwarzi, new species.

Female: Uniform chestnut brown above and below. Head smooth with one setiferous puncture on the inner side of the posterior part of each eye. Thorax smooth cordate, well rounded laterally, constricted posteriorly; anterior, basal, and median impressions well defined; lateral margin with two setiferous punctures about the middle and another close to the hind angle. Elytra ovate, sides rounded, apex well pointed, humeri wanting, disc somewhat flattened with light abbreviated striæ, all terminating some distance from the apex, the first, second, and third deeply

impressed with large punctures to or a little beyond the middle; the following striae are gradually less distinct with little or no evidence of punctures; the seventh and eighth striae are very feeble and the latter is scarcely evident, except under a high-power lens. There are three setiferous punctures close to the lateral margin basally, two on the eighth stria, five on the fourth interval, and four at the apex of the abdomen. Lateral margin impressed and not punctate. Length, 9 mm.

Habitat: Mount Mitchell, North Carolina, altitude 6,710 feet.

Allied to *N. hubbardi* from which it differs in form of the elytra, being more robust, broader, with the sides more rounded, and by having the apex more pointed. It also differs in having more striae, with the punctures distinct only at the base. *N. hubbardi* is a narrower and more graceful species and in shape somewhat resembles *N. imperfectus*. *Schwarzi* was described from a single female taken June 3, 1912, on the summit of the Black Mountains, under a large stone deeply imbedded in moss. It was compared with the types of *N. hubbardi* in the Horn collection and it gives me great pleasure to dedicate the species to Mr. E. A. Schwarz.

SEVEN NEW MICROLEPIDOPTERA FROM MEXICO

By AUGUST BUSCK

Gelechia tehuacana, new species.

Labial palpi with small, even brush; second joint white with dark brown base; terminal joint dusky. Face and head white. Thorax white; patagia dark brown with white tips. Forewings blackish brown with a purple sheen; dorsal edge broadly white through its entire length to tornus; a white outwardly curved costal streak at basal fourth; just beyond the middle of the wing a narrow, transverse white fascia, curved outward on the costal edge and somewhat widened at the dorsal white edge; at apical fifth is a broad, inwardly curved, white dash. Terminal cilia dark brown; dorsal cilia white. Hindwings blackish fuscous. Abdomen blackish brown with ochreous anal tuft. Legs dark fuscous with narrow, indistinct, white annulations at the joints.

Alar expanse, 19 mm.

Habitat: Tehuacan, Mexico, July (R. Müller).

Type No. 16661, U. S. Nat. Mus.

A striking species of the black and white group, nearest to *Gelechia unifasciella* Busck, from which it differs in the presence of the two conspicuous white costal streaks.

Ethmia striatella, new species.

Labial palpi white, second joint with two narrow, incomplete black annulations, one at base, one near the tip and with extreme tip black. Face white. Head white with a blackish central tuft. Thorax dark fuscous mixed with white, collar and patagia lighter, gray. Forewings white, heavily overlaid with blackish fuscous in irregular longitudinal dashes and streaks; a series of about ten black marginal spots around the apical and terminal edges; cilia white dotted with dark fuscous. Hindwing whitish fuscous, semitransparent, with darker fuscous edges and tip; cilia yellowish white. Abdomen golden yellow throughout its length. Legs white, posterior tibiae and tarsi barred with black.

Alar expanse, 22 mm.

Habitat: Tehuacan, Mexico, June (R. Müller).

Type No. 16662, U. S. Nat. Mus.

Nearly identical in color, size, and markings with *E. confusellus* Walker, but at once distinguished by the golden yellow abdomen.

Commophila zacualpana, new species.

Labial palpi white. Face, head, and thorax white. Forewing dark purplish fuscous, overlaid with and irrorated with lighter, slightly raised, brown and bluish metallic scales; a large basal white area covers nearly a third of the wing space and is sharply limited in an oblique line from basal fifth of dorsum to just before the middle of costa; the basal third of costal edge within this white space is dark fuscous; at apical third is a large, irregular, poorly defined white costal blotch, reaching down to the end of the cell; connecting these two white areas is a longitudinal thin black line in the cell; in the apical portion of the wing is a large ill-defined area strongly mottled with black; cilia dark fuscous with white basal line. Hindwing on both sides and underside of the forewing light fuscous, irrorated by numerous ill-defined transverse darker fuscous dashes. Cilia yellowish. Abdomen dark fuscous with ochreous anal tuft. Legs unmottled light ochreous.

Alar expanse, 24 mm.

Habitat: Zacualpan, Mexico, July (R. Müller).

Type No. 16663, U. S. Nat. Mus.

Nearest to *C. saxicolana* Walsingham, but darker and without the dorsal white markings of this species.

Dorata sagittella, new species.

Female: Labial palpi light drab colored sprinkled with black scales. Face, head, and thorax light drab colored. Forewings uniformly light drab colored with a silvery sheen irregularly and sparsely dusted with single black scales; at the end of the cell is a small black dot, consisting of half a dozen black scales. Cilia concolorous. Hindwing light ochreous fuscous, shiny. Abdomen dark fuscous. Legs light drab colored, sprinkled with black.

Alar expanse, 48–52 mm.

Habitat: Tehuacan, Mexico, October (R. Müller).

Type No. 16664, U. S. Nat. Mus.

This species is very close to but much larger than *Dorata inornatella* Busck, from which it differs by the black dusting and black second discal spot.

A male, which I presume belongs to this species, has somewhat darker drab colored forewings and much darker blackish fuscous hindwings and legs.

Alar expanse, 38 mm.

Acrolophus apertella, new species.

Male: Labial palpi very long, overreaching head and thorax, evenly and loosely tufted throughout its length; dark reddish brown with blackish brown base; head and thorax dark brown; patagia light reddish brown. Forewing light reddish brown with a conspicuous, broad, oblique black streak at the end of the cell directed toward tornus; beyond it within the terminal edge is a large round black dot and the triangle limited by these two markings is suffused with blackish brown; a marginal series of about ten equidistant, small, and inconspicuous blackish dots along costa from base to apex; cilia reddish brown. Hindwings dark purplish brown, with lighter ochreous base. Abdomen blackish brown, with large, light reddish brown anal tuft. Underside of body long-haired, blackish brown. Legs light brown.

Alar expanse, 29 mm.

Habitat: Zacualpan, Mexico, July (R. Müller).

Type No. 16665, U. S. Nat. Mus.

Similar in size and markings to *A. directa* Busck, but very different in color and in form of the palpi; *A. directa* was described from the female and the possibility is not excluded that the two names apply to the two sexes of the same species, though the great variation in color would be remarkable.

Acrolophus harmoniella, new species.

Labial palpi long, straight, porrected, each joint with a separate, pointed tuft; ochreous white, sprinkled with light reddish brown. Forewings white with a faint rosy tint and ochreous and dark fuscous scales; a large, faint, dark fuscous, triangular spot on outer third of the fold touches a large, faint, dark fuscous spot which begins narrowly on the costal edge at apical third and spreads out over and beyond the end of the cell; two inconspicuous, dark fuscous costal spots on outer third and a series of faint, ill-defined fuscous spots along the terminal edge. Cilia white dusted with reddish fuscous. Hindwings uniformly light fuscous. Abdomen dark fuscous with whitish ochreous underside. Legs dark brownish fuscous with narrow ochreous annulations at the joints.

Alar expanse, 24 mm.

Habitat: Tehuacan, Mexico, June (R. Müller).

Type No. 16666, U. S. Nat. Mus.

Acrolophus maculisecta, new species.

Male: Labial palpi very long, overreaching the thorax; first and second joints tolerably smooth; terminal joint tufted and brush-shaped toward its apex; dark purplish brown. Head and thorax dark brown. Forewing dark purplish brown with dorsal edge somewhat lighter and indistinctly mottled with still darker, blackish scales; a longitudinal black streak from the base along the fold interrupted in the middle by a longitudinal light ochreous dash beyond the end of the cell, preceded and followed by black scales. Cilia dark ochreous, strongly mixed with dark brown and fuscous. Hindwing dark brown. Abdomen dark purplish brown with ochreous anal tuft and light ochreous underside. Legs light ochreous brown.

Alar expanse, 24 mm.

Habitat: Misantla, Mexico, August (R. Müller).

Type No. 16667, U. S. Nat. Mus.

NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

Director of Entomological Stations, Lima, Peru

The flies described in this paper were all collected by myself, except in the few cases that are duly noted. The Andean localities may be briefly described as follows:

Uruhuasi Bridge is in the canyon of the Rio San Gaban, at an altitude of about 6,500 feet, on the eastern slope of the Cordillera Oriental in southern Peru. The Rio San Gaban flows into the Rio Inambari, which is a branch of the Rio Madre de Dios, one of the principal heads of the great Rio Madeira system. Uruhuasi is situated at about the upper limits of the tropical rain forest, where the latter thins out and finally gives way on the slopes to the scrub forms of woody vegetation which characterize the higher levels. Ollachea is above Uruhuasi in the same canyon at about 9,500 feet, closely shut in by towering mountains and ridges. Casahuiri is below Uruhuasi in the same canyon, at about 4,500 feet, and well within the forested region.

Huascaray Ridge is in the Cordillera Oriental of northern Peru, on the boundary between the departments of Piura and Cajamarca, separating the two provinces of Huancabamba and Jaen respectively thereof. The locality where the collections were chiefly made is on the eastern base of Huascaray, at about 7,000 feet, in the extreme western border of Jaen province. It is on the headwaters of the Rio Tabaconas, which flows into the Rio Chinchipe, one of the northern affluents of the Rio Marañon or mountain course of the upper Amazon. The tropical rain forest throws dilute arms up the valleys of this region, one of them reaching the eastern base of Huascaray. Charape or Hacienda Charape is well below Huascaray, in the Rio Tabaconas valley, at about 3,700 to 4,000 feet. The Rio Charape is a very small stream flowing from the north into the Rio Tabaconas at Charape. The collecting was done about a league up the Rio Charape, at about 4,500 to 5,000 feet, where the true tropical rain forest throws one of its denser arms over the hills. The Rio Tabaconas valley from Charape both up and down is more open than is this quite heavily forested locality up the Rio Charape.

The Rio Chira and the Rio Casma are in the low coast region of Peru, in the departments of Piura and Ancachs respectively, the former

in the north and the latter nearer the center of the Peruvian coast strip considerably north of Lima. Sullana, in the Rio Chira valley, is well removed from the western Andean foothills; but Casma, in the Rio Casma valley, while practically on the coast, is also close up against the bare western spurs of the Andes. The atmospheric humidity in the Rio Chira region is much less than that in the Rio Casma region and prevails during a less extended season of the year, the maximum of humidity in both being from June to September. This subarid coast strip of Peru shows a northward extension of the Chilean fauna and is almost entirely distinct faunistically from the humid region on the east side of the Andes termed the montanya. In the north only is there a slight intermingling of humid tropical forms acquired from the moist coast region of Ecuador and from the patches of montanya in the valleys and on the moisture-favored slopes of the north Peruvian and south Ecuadorian region where the Andes spread out and their crests become much lower than in the center and south of Peru.

The word montanya is the anglicized form of the Spanish word *montaña*, which literally means a mountain area, but has come to signify any area densely overgrown with native vegetation, and especially forest growth. The term is here used to mean any humid mountain area from base to top, thus any humid area subjected to mountain conditions. The montanya occurs in its most accentuated phase on the lower half of the east slopes of the Andes. Its lower eastern limits are indefinite in the Spanish-American sense, but may be taken in a biogeographical sense in the Andean region as near the 1,000-foot contour line or about the head of steam navigation on the inland waterways. It thus includes the belt of considerable fall as indicated by swift-flowing rivers. The term is a very convenient one for use in biogeographic treatment, and while distinctively South American in current geographical application is here intended to apply to similar areas elsewhere. The montanya divides easily into an upper and a lower belt, the high or dilute montanya and the low or true montanya, the division being generally marked in the Andean region by the limits of forest growth. In Central America and tropical Mexico the division is marked by the limits of hardwood forest. The line of separation follows practically the same isotherm throughout, for in the Andean region pines are absent and the forest is all hardwood. This isotherm is found at about 6,500 to 7,000 feet in latitude 12° S., and gradually ascends northward to 7,500 or 8,000 feet in latitude 4° S.

The whole Peruvian montanya, combined with that of Bolivia on the south and Ecuador and Colombia on the north, constitutes the most prolific biotic region on earth. This results from its natural advantages in this respect. Situated at the base and especially on the lower half or more of the slopes of the moist eastern exposure of the Andes, its axis disposed nearly north and south, with the most extensive low-lying humid tropical region on earth to draw from—the great Amazons-Orinoco-La Plata tropical rain-forest region—it furnishes in its varying altitudes, latitudes, slope exposures, and soil constitutions, with their dependent fluctuations of meteorological, food-supply, and other environmental conditions, the greatest variety of factors possible of attainment for the evolution of forms of life. If the living forms exposed to such influences belong to young and plastic stocks now in the evolutionary prime of their unfolding and specialization, at the climax of their susceptibility to variation and adaptation, it is small wonder that they respond thereto in an excessive profuseness of typical and transitional forms approximating the actual conditions that the older types of life have passed through in their early development. Here are verily exhibited to the biologist, if he have eyes to see, the intricate processes involved in the origin of species. Here may be witnessed genera in the making. Such conditions, it is true, exist to an extent in other parts of the world, but nowhere else on such a vast and therefore highly illustrative scale as in the eastern foothill and moist-slope region of the Andes.

Considered as an active biotic entity, this montanya region extends in latitude continuously north and northwest from Patagonia to Alaska, and in altitude from the whole eastern base to the crests of the Andes and their succeeding chains to the north, culminating in the Rocky Mountain system, descending in places to the western base also. Its fauna throughout and especially its basic or low-altitude to mean-altitude stocks are thus assured access to every possible complex of climatic, topographic, and geologic variations that will sustain life, in both horizontal and vertical distribution zones, between opposed boreal parallels of latitude and between sea-level and perpetual-snow altitudes. All of these complexes have their respective distinct effects on food supply, interracial competition, life struggle, and general environment. From central to northern Peru it laps over in its normal humid aspect into the canyon beds of the western slopes of the Andes, at first between the 5,000-foot and 9,000-foot levels but dropping in the north as low as 3,000 feet, and from the

Peru-Ecuadorian frontier northward lowers still further and encroaches rapidly on the coast strip until it reaches the Pacific at the Gulf of Guayaquil. From here to Panama it hugs the west coast constantly and from Costa Rica to Chiapas intermittently, but practically leaves it from Tehuantepec to San Francisco Bay, where a preponderance of arid to sub-arid conditions again intervenes along the Pacific front, corresponding in the north to the 2,000-mile desert stretch from Tumbez to Valparaiso. South of Valparaiso and north of San Francisco it hugs the coast quite continuously. From central Chile to central Peru it is practically absent from the western slopes.

The region in question, which may be known as the Andes-Rocky Mountain montanya, exhibits a marked element of endemic tropical lowland types from northwestern Argentina in the south temperate zone to Venezuela, Colombia, Panama, Central America, and central Mexico in the torrid zone, and the Sierra Madre of northern Mexico and the coastal valleys of northeastern Mexico and southern Texas in the north temperate zone. Some of its endemic intertropical mountain stocks, as exemplified in the bulk of the family *Hystriciidae*, reach an abundant development as far north as the Sierra Nevada of California and the Rocky Mountains of Colorado, though in a far less variety of forms. Others, as exemplified in the Hystriciid-like groups of the Exoristid subfamily *Pyrrosiinae*, seem much more nearly confined to the Andean region, being here signalized by a most marked development. In the past the whole region has drawn from the south many of the stocks which originated in Antarctica and her former dependencies or connections, and from the north many of those which originated in Eurasia and northern America; in the present it draws on the descendants of these antipodal elements engrafted on the native stocks, as they exist to-day in the two Americas. From Bolivia to Ecuador occur its broadest contrasts in extremes of conditions ranged practically side by side. The Peruvian montanya is in the heart of all this—in the great central region of its highest evolutionary activity.

The flies comprised in the family *Hystriciidae* and the Exoristid subfamily *Pyrrosiinae* exhibit some of the youngest and most plastic stocks of the animal kingdom. The variety of forms which they display in the Andean montanya is marvelous and astounding until one realizes the richness of this region in conditions favorable to their evolution. They range from the low Amazonian plains at the base of the Andes up the

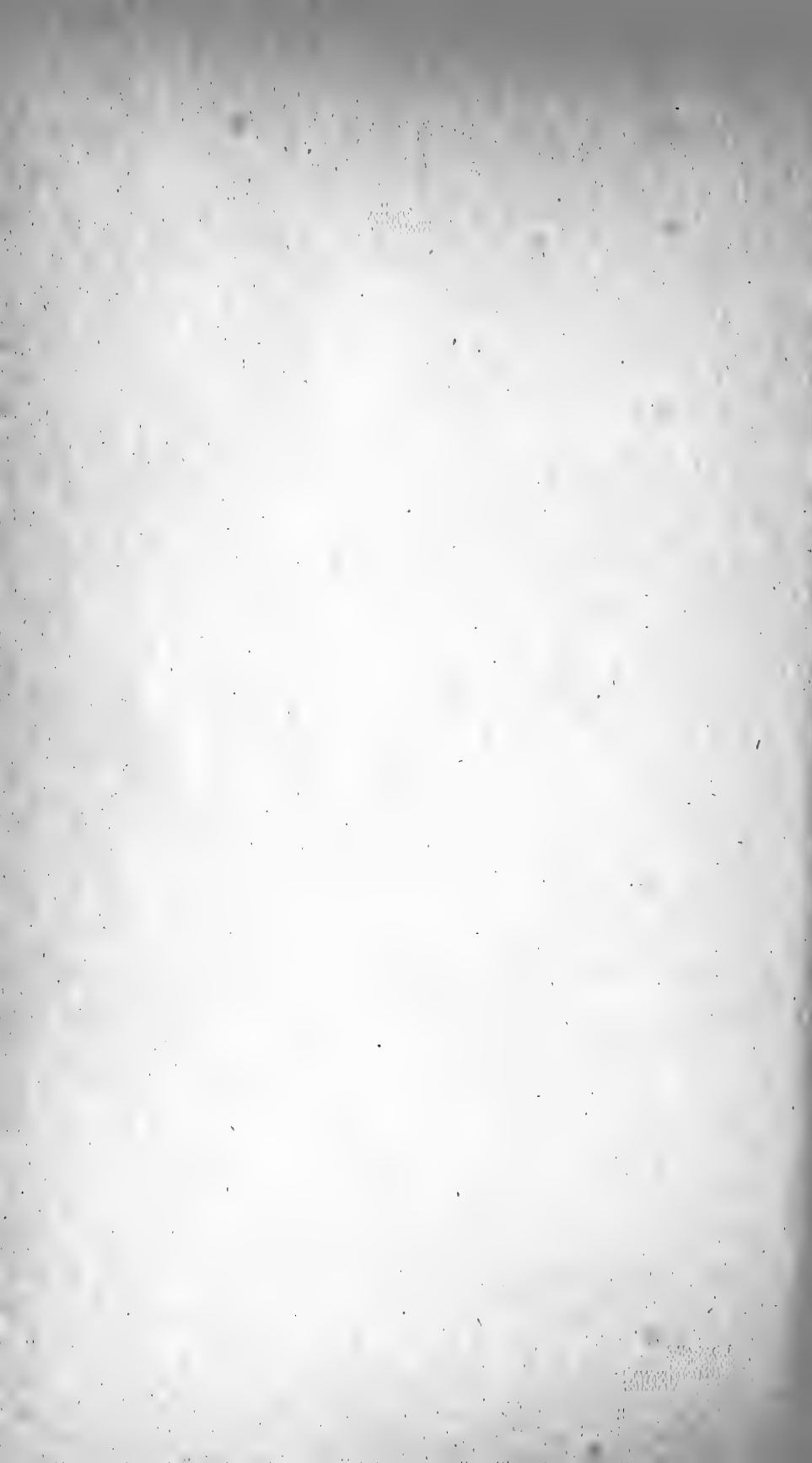
slopes to 14,000 feet and even higher, but are especially prolific in forms between 4,500 and 9,500 feet, and most of all so on the eastern slopes at 6,500 to 7,500 feet or about the limits of forest growth, the increase of altitude depending on approach to the equator and the figures given applying from southern Peru to southern Ecuador. The superficially similar tribes *Epalpini* of the *Hystriiidae* and *Gymnommini* of the *Pyrrosiinae* appear to come first with respect to prolificness in forms. The most unlooked-for variety of these flies especially, but also of various *Hystriid* forms, was found by me at Uruhuasi, in southern Peru, at about 6,500 feet; near Huacapistana, in central Peru, at about 6,700 feet; on the east base of Huascaray, in northern Peru, at about 7,000 feet; and at Manchi, in southern Ecuador, between 7,000 and 7,500 feet. By far the greater part of the descriptions in this paper are of forms of these flies found by me at Uruhuasi and Huascaray. Many others were found in the high puna region extending from Lake Junin to Lake Titicaca, and down the Rimac Canyon on the western slopes to Matucana and Agua de Verrugas, the latter being 5,000 feet. Some of these have already been described (*Proc. U. S. Nat. Mus.*, vol. 43, no. 1935; *Psyche*, June, 1913), and a few more are included in this paper.

On epistomal, macrochaetal, palpal characters and general habitus, the *Epalpini* in large part approach closely to many of the *Gymnommini*, but the uterine characters seem to indicate that the two stocks are quite distinct and that the similarity in external adult characters is due to parallelism rather than to close relationship. The same conditions occur in other muscoid stocks, as witness the remarkable external similarity in *Sisyropa hemerocampae* T. of the *Exoristidae* and *Eumasicera coccidella* T. of the *Masiceratidae*, whose close relationship is positively contradicted by the uterine and egg characters as well as those of the maggot. Some of the *Pyrrosiinae* possess a colored maggot and some are furnished with spine-like macrochaetae. *Tropidopsis*, *Janthinomyia*, and *Paragymnomma* are examples of the latter category; while *Eugymnochaeta*, *Gymnochaetopsis*, *Macquartia*, *Steiniella*, and others are examples of the former. Recently the writer has found forms with both colored maggots and spine-like macrochaetae.

(To be continued.)

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No. 12

ON A COLLECTION OF THYSANOPTERA FROM PORTO RICO

By J. DOUGLAS HOOD

The late Dr. C. W. Hooker, while Entomologist of the Porto Rico Agricultural Experiment Station, made a small collection of the Thysanoptera from the region immediately about Mayagüez, Porto Rico. This collection was kindly referred to me for determination by his brother, Dr. W. A. Hooker, and in it I find six additions to the known Thysanopterous fauna of the island, recorded below.

The species previously known from the island are *Gynaikothrips uzeli* Zimmermann (= *Phlaeothrips ficorum* Marchal = *Liothrips bakeri* D. L. Crawford) which was recorded by Russell in 1912,¹ and *Heterothrips sericatus* Hood and *Podothrips semiflavus* Hood, described as new in 1913.²

Frankliniella insularis (Franklin).

This is an abundant thrips in southernmost Texas, in all of Central America, in at least the northern portions of South America, and on many, if not all, of the islands of the Caribbean Sea. The Porto Rican specimens bear the following data:

Mayagüez, Porto Rico, Feb. 19, 20, 21, and 23, 1912, C. W. Hooker, in blossoms of *Agati grandiflora*, No. 1625.

Mayagüez, Porto Rico, March 4 and 6, 1912, C. W. Hooker, in blossoms of orange.

¹Russell, H. M., The Red-Banded Thrips, Bull. 99, Pt. II, Bur. Ent., U. S. Dept. Agr., p. 17 (footnote), Dec. 14, 1912.

²Hood, J. Douglas, Two New Thysanoptera from Porto Rico, Ins. Ins. Mens., Vol. I, pp. 65-70, Pl. I, June 30, 1913.

Frankliniella tritici (Fitch) ?

One male, almost certainly this species, was taken with many specimens of *F. insularis*, at Mayagüez, Porto Rico, March 4, 1912, by C. W. Hooker, in blossoms of orange.

Selenothrips Karny.

1911. *Selenothrips* Karny (a subgenus of *Heliothrips* Haliday), Ent. Rundsch., XXVIII, Jahrg., No. 23, p. 180.

The name *Selenothrips* was proposed as a subgenus of *Heliothrips*, and in it were placed *Physopus rubrocincta* Giard and a new species, *Heliothrips* (*Selenothrips*) *decolor* Karny. I believe the group entitled to generic rank.

Type: *Physopus rubrocincta* Giard, by present designation.

Selenothrips rubrocinctus (Giard).

This important insect enemy of the cacao in the West Indies is represented by many specimens of both sexes, with the following data :

Mayagüez, Porto Rico, November 21, 1911, C. W. Hooker, on cacao.

Mayagüez, Porto Rico, December 5, 1911, C. W. Hooker, on cacao; No. 1602.

Mayagüez, Porto Rico, April 9, 1912, C. W. Hooker, on mango; No. 1234.

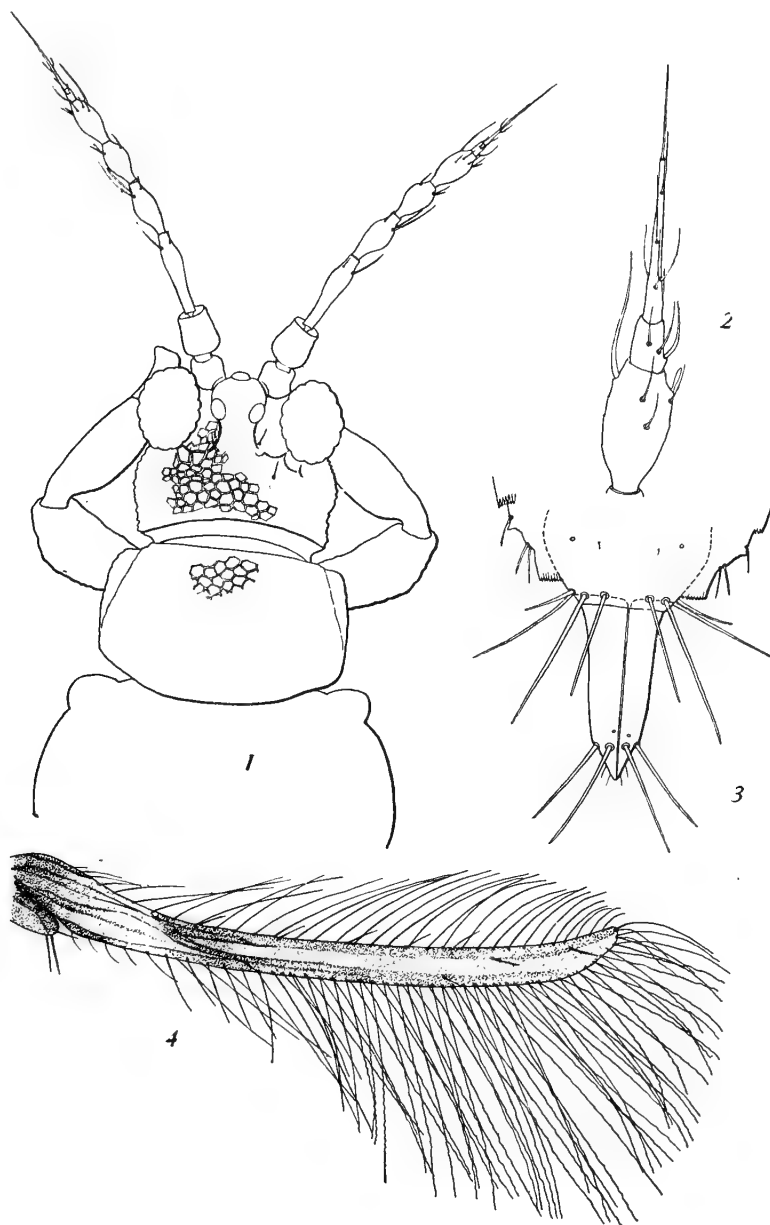
Heliothrips hæmorrhoidalis (Bouché).

Represented by one female, taken in company with many specimens of *Selenothrips rubrocinctus*, on cacao, at Mayagüez, Porto Rico, November 21, 1911, by C. W. Hooker.

Dinurothrips, new genus.

(*Σεινὸς*, wondrous, strange; *οὐρᾶ*, tail; *θρίψ*, a wood worm.)

Body deeply reticulate. Head broader than long, cheeks swollen; vertex elevated between the eyes in the form of a hump and produced. Eyes protruding, surrounded by a more or less distinct furrow. Ocelli approximate; anterior ocellus overhanging, directed forward. Antennæ 8-segmented, very slender (excepting the first two segments); sense cones simple; segment 8 long, needle-like. Maxillary palpi 2-segmented. Prothorax strongly transverse, slightly shorter than head, without long bristles; lateral margin broadly explanate in anterior half. Wings slender, not reticulated; forewings strongly recurved at apex and saber-like in form, with two longitudinal veins following near the margins to apex; a distinct "ring vein" in basal third; costal spines and those on the two longitudinal veins very short, slender, and inconspicuous; costal fringe



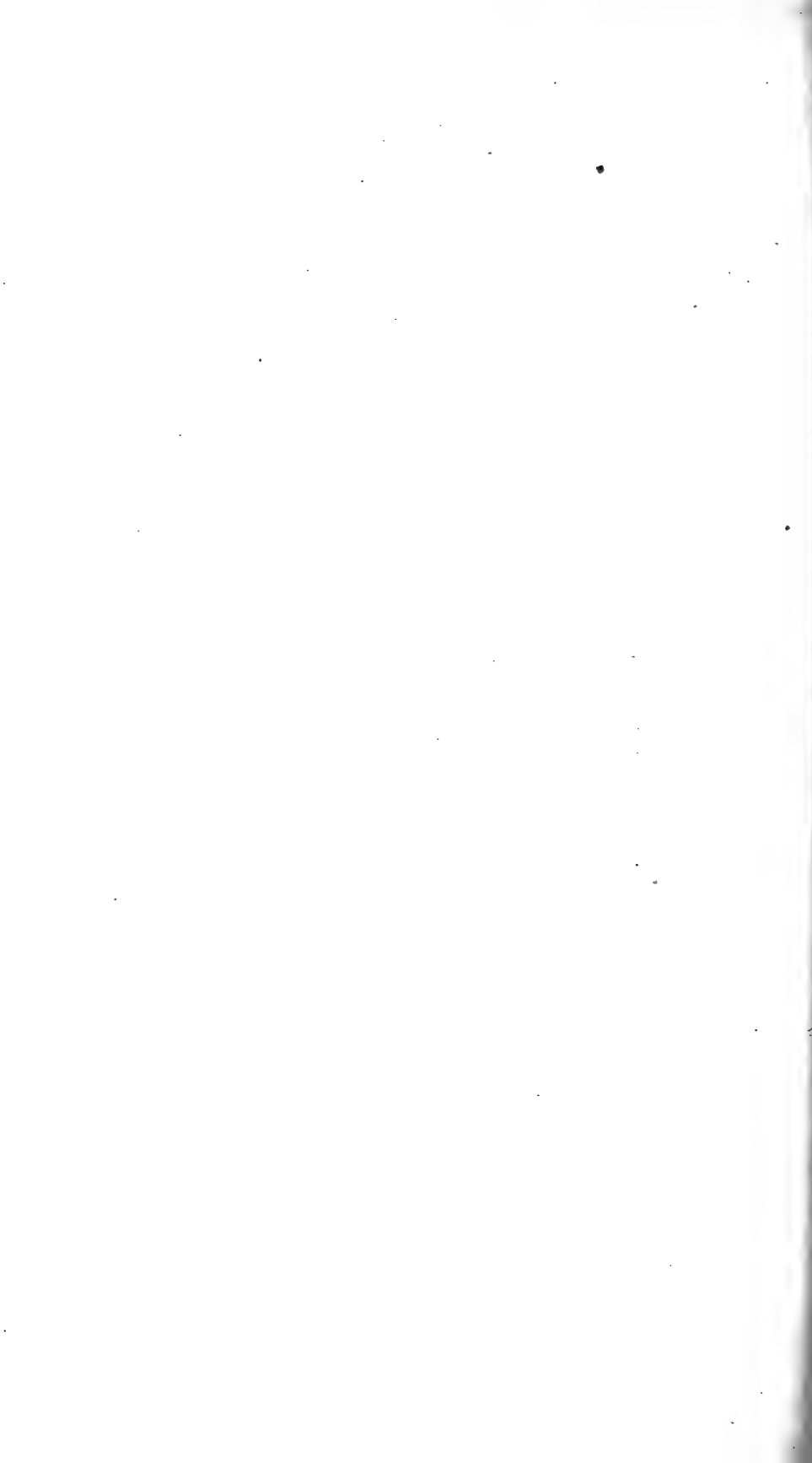
DINUROTHRIPS HOOKERI Hood.

Fig. 1.—Head and prothorax, female.

Fig. 2.—Segments 6-8 of right antenna, female.

Fig. 3.—Tip of abdomen, female.

Fig. 4.—Right fore wing, female.



strong. Abdomen elongate-elliptical, evenly convex above, lateral margins eaves-like; ninth segment in the female received within the eighth; tenth segment cylindrical; bristles on segments 9 and 10 long and strong, all other bristles minute.

Type: *Dinurothrips hookeri* Hood.

A very distinct genus, suggesting *Parthenothrips* Uzel in general appearance, though approaching *Panchætothrips* Bagnall much more closely in all important details of structure. Both of these genera have wings strikingly different from *Dinurothrips*. *Parthenothrips* differs also in the form of the last abdominal segment and in the number of antennal segments; *Panchætothrips* has 3-segmented maxillary palpi. The thin, shelf-like margin of the anterior half of the prothorax appears to be a structure unique for the entire order.

***Dinurothrips hookeri*, new species (Pl. V, figs. 1-4).**

Female.—Length about 1.7 mm. Dorsal surface deeply reticulate. General color dark orange-brown to blackish brown; sides of head and thorax, and bases of abdominal segments 3-7 often darker; abdomen pale toward apex, last two segments heavily chitinized and darkened with blackish; tibiæ, tarsi, and antennal segments 1, 3, 4, and 5 yellow.

Head nearly 1.2 times as wide as long, distinctly longer than prothorax, very slightly broadest across eyes; cheeks swollen behind eyes, abruptly constricted at extreme base, the dorsal and lateral surfaces of the head anterior to this constriction with a prominent dark carina. Eyes equal in length to their distance from posterior margin of head and two-thirds as wide as their interval, strongly protruding, non-setose. Ocelli approximate, anterior ocellus on a line with the front of eyes, posterior ocelli opposite their centers. Antennæ 2.2 times as long as head, with faint chitinous rings; segment 1 subcylindrical, slightly broader than long; 2 broadest in entire antenna, subspherical, pedicellate; 3 longest in entire antenna, slender, vase-like in form, pedicellate, abruptly narrowed in apical sixth; 4 shorter and stouter than 3, vase-like, about two and one-half times as long as wide, twice as broad across middle as at ends; 5 clavate, shorter and about as stout as 4; 6 and 7 together (exclusive of the pedicel of 6) of same form as 5, but inverted; 7 about one-third as long as 6; 8 needle-like in form, longer than 6, terminating in a long hair; segments 2, 6, 7, and 8 blackish brown, 2 paler apically and with pedicel yellow; 3-5 clear pale yellow, or 5 slightly infusate apically.

Prothorax a little more than one and one-half times as wide as long, slightly shorter than head and with similar reticulation. Pterothorax nearly one and one-half times as wide as prothorax, darkest in color at sides; mesonotal plate deeply incised in middle behind, the reticulations converging to anterior end of this incision. Wings slender, saber-like in form, about ten times as long as greatest subbasal width, almost attaining tip of abdomen; anterior vein of forewings usually with two short, inconspicuous bristles near apex and two near base of wing, the basal one at the junction of the two principal veins; posterior vein usually with two similar bristles near apex and one near base; wings of both pairs brown, fore pair with a pale band in basal fifth and with all veins dark brown; hindwing with dark brown median vein.

Abdomen distinctly wider than pterothorax, elongate-elliptical, deeply reticulate above; last segment abruptly narrower, tube-like, about as long as head, divided in its entire length above by a longitudinal suture. Abdominal bristles very weak and inconspicuous on segments 1-8; segment 9 with four pairs of unusually stout and conspicuous dorso-lateral bristles, of which one pair is nearly equal in length to last abdominal segment; apical fifth of last abdominal segment with two pairs of similar bristles, about half as long as the segment.

Measurements of holotype: Length 1.72 mm.; head, length 0.163 mm., width 0.192 mm.; prothorax, length 0.144 mm., width 0.234 mm.; pterothorax, width 0.336 mm.; abdomen, width 0.408 mm.; last abdominal segment, length 0.174 mm. Antennal segments: 1, 27μ ; 2, 48μ ; 3, 84μ ; 4, 54μ ; 5, 44μ ; 6, 45μ ; 7, 15μ ; 8, 56μ ; total length of antenna, 0.37 mm.; width at segment 4, 0.022 mm.

Described from 63 females, taken at Mayagüez, Porto Rico, April 30 and May 3, 1912, by Dr. C. W. Hooker, on *Ipomæa* sp.

This species is one of the most distinct in the Neotropical fauna, and is distinguished from all other known Thysanoptera by several remarkable characters of generic importance. It is dedicated to the memory of the late Dr. C. W. Hooker, who for several years was greatly interested in this order of insects.

Haplothrips gowdeyi (Franklin).

Three specimens, all females, were taken by Dr. C. W. Hooker, "from flowers, Mayagüez, Porto Rico." The date and host plant are not given.

Gynaikothrips uzeli Zimmermann.

1900. *Mesothrips uzeli* Zimmermann, Bull. Inst. Bot. Buitenzorg, No. VII, p. 12; fig. 4, i-iv ("Gynaikothrips uzeli"), fig. 5, i, ii.
1908. *Phlaeothrips ficorum* Marchal, Bull. Soc. Ent. France, 1908, No. 14, p. 252.
1910. *Liothrips bakeri* D. L. Crawford, Pomona Coll. Journ. Ent., Vol. II, No. 1, p. 161; fig. 67, A-D.
1911. *Gynaikothrips uzeli* Karny, Centralb. f. Bakteriöl., Parasitenk., etc., II Abteil., XXX Bd., pp. 559, 560, 561, 562; figs. 1, 2, 5, 9, 13.
- Apr., 1912. [*Mesothrips* (?)] *bakeri* Hood, Proc. Biol. Soc. Wash., Vol. XXV, p. 62.
- June, 1912. *Gynaikothrips ficorum* Karny, Fauna exotica, II Jahrg., No. 5, p. 19.
- July, 1912. *Phlaeothrips ficorum* Houard, Ann. Soc. Ent. France, Vol. LXXXI, p. 56, figs. 103-108.
- Oct., 1912. [*Mesothrips* or *Smerinthothrips*] *bakeri* Karny, Trans. Ent. Soc. Lond., 1912, p. 472.
- Dec. 9, 1912. *Gynaikothrips ficorum* Karny, Marcellia, Vol. XI, p. 129.
- Dec. 9, 1912. *Gynaikothrips uzeli* idem, ibidem.
- Dec. 14, 1912. *Mesothrips ficorum* Russell, Bull. 99, Pt. II, Bur. Ent., U. S. Dept. Agr., p. 17 (footnote).
1913. *Gynaikothrips uzeli* Karny, Bull. Jard. Bot. Buitenzorg, Deux. Sér., No. 10, p. 103; figs. 73, 74?
1913. *Gynaikothrips uzeli* van Leeuwen-Reijnvaan, ibidem, pp. 7-10, figs. 2, 3.

Type locality: Buitenzorg, Java.

Distribution: Java, Algeria, Canary Islands, Cuba, Porto Rico, Florida.

Food plants: Various species of *Ficus*, especially *F. retusa* and *F. benjamina*; tobacco?

Dr. Hooker's collection contains a large number of specimens of this insect, labeled as having been taken at Mayagüez, Porto Rico, May 23, 1912, on tobacco. If this food-plant record is correct, and the habit a usual one, the species deserves to be watched very carefully by the economic entomologist.

The synonymy given above is the result of a comparison of specimens from Java, Algeria, Canary Islands, Cuba, Porto Rico, and Florida, received through the kindnesses of Dr. Louis Trabut, Dr. Heinrich Karny, Dr. W. A. Hooker, Mr. E. A. Schwarz, and Mr. D. L. Crawford.

The specimens from Dr. Trabut are from the same locality as those sent by him in 1908 to Dr. Marchal and which were described as *Phlaeothrips ficorum*. The specimens from Dr. Karny were almost certain compared with some of Zimmermann's types. Those from Mr. Crawford consisted of five cotypes of his *Liothrips bakeri*.

Working with this well-authenticated material, I have found it abso-

lutely impossible to subdivide the species other than by the individual characteristics of the preparation. The thrips was evidently introduced with its food plant from the far east.

It was observed as early as 1887 by Mr. E. A. Schwarz, at Key West, Florida; at Matanzas, Pinar del Rio, and Havana, in Cuba; and in Porto Rico. Along the Prado, in Havana, where the tall figs have been the principal shade trees since their introduction many years ago by the Spanish, he found this insect a serious pest. Infested trees had a decidedly grayish cast, for nearly every leaf was at least partially involved in the galls, which are formed by a longitudinal roll or fold in the leaf.

Good figures of the various forms of these galls are given by Houard and by Leeuwen-Reijnvaan, loc. cit.

A NOTE ON SOME AMERICAN SIMULIIDÆ

By FREDERICK KNAB

Roubaud, in 1906, described a new *Simulium* from Venezuela under the name *Simulium exiguum*.¹ In 1909 Dr. A. Lutz described another species from the State of São Paulo (Brazil), under the same name.² It is the accepted procedure to propose a new name for a homonym and in 1911 Surcouf and Gonzalez Rincones, in a compilation on the South American blood-sucking Diptera, proposed the name *Simulium minutum* for the *S. exiguum* of Lutz.³ This name, however, is also pre-occupied, having been given to a North American species by Lugger in 1896.⁴ While no description was given by Lugger of his *S. minutum*, there is a figure and this gives the name validity. Recent developments make it desirable that the two species named *S. exiguum* should now be put on a definite basis.

The U. S. National Museum has long been in possession of a small series of Roubaud's *S. exiguum* from his type material, and the writer has identified as conspecific with these some specimens taken by Messrs. Schwarz and Barber in eastern Guatemala. These latter were taken 4 miles off Livingston, March 20, 1906, and at Cacao, Trece Aguas, Alta Vera Paz, April 9 and 12, 1906. Now the *Simulium exiguum* of Lutz has also come to hand. Prof. F. W. Urich has sent me for iden-

¹ Bull. Mus. Hist. Nat. Paris, 1906, p. 108.

² Mem. Inst. Osw. Cruz, Vol. I, No. 2, 1909, pp. 132, 141.

³ Essai sur les Diptères vulnérants du Venezuela, 1911, p. 290.

⁴ Second Ann. Rept. Entom. . . . Minnesota, 1896, pp. 175, 176, fig. 143.

tification a series of this species taken by him in the forests of the Central Range of the island of Trinidad, in November, 1913. From comparison of these specimens with Roubaud's species, it is evident that the two species, although similar, are abundantly distinct. I therefore propose

***Simulium lutzi*, new name,**

for the *Simulium exiguum* of Lutz. Both species are very small, very compact, and have a very convex scutum. Both show a general black body color and have golden scales on the mesonotum, arranged in little groups forming longitudinal series, but not sharply defined lines. These scales in *S. exiguum* Roubaud are brilliant green and much broader than in *S. lutzi*; in the latter species the scales are deep golden and somewhat smaller, giving a less brilliant effect than in the other species. *S. lutzi* is further distinguished by having on the mesonotum a very broad crescentic band of pearly gray, becoming brilliantly iridescent or disappearing altogether with the changing incidence of light, and occupying the base and extending forward at the sides to near the humeri; at the anterior margin there are also two large triangular iridescent white spots. In *S. exiguum* (Roubaud) the middle legs are pale yellowish throughout, while in *S. lutzi* they are for the most part black. The front legs of Roubaud's species are also for the most part pale, the dark color beginning at about the middle of the first tarsal joint and involving the last four joints. In *S. lutzi* the front tibia is brilliantly white scaled on the outer side, its tip black, and the front tarsi are entirely deep black. Surcouf and Gonzalez Rincones place Roubaud's *Simulium exiguum* in the genus *Eusimulium*¹ and Lutz's species in *Simulium* as restricted by them. It is difficult to see how these authors arrived at such a conclusion, since the two species are intimately related and do not present the structural differences indicated in their generic division.² Furthermore, Roubaud's *Eusimulium* is absolutely synonymous with *Simulium* Latreille, and the differences indicated as generic by Surcouf and Gonzalez Rincones will not serve to differentiate separate groups.

This is a suitable place to indicate the following synonymy for another South American species:

***Simulium dinellii* (Joan).**

Melusina dinellii Joan, Bol. Minist. Agric. [Buenos Aires], xiv, No. 4, pp. 363-385, text figs., pls. 1, 2 (April, 1913).

¹ L. c., p. 279. ² L. c., p. 277.

Simulium bipunctatum Malloch, Proc. U. S. Nat. Mus., xliii, p. 650 (Dec. 31, 1913).

The types of *Simulium bipunctatum* in the U. S. National Museum agree very closely with Miss Joan's very detailed description and figures. The only discrepancy is in the size and this can not be given much weight, particularly as Miss Joan seems to have erred in her measurements. She states that her specimens measured from 2.5 to 3 mm. in body length and that the wings do not exceed 2.5 mm. Her figure, however, shows that, as in other species of *Simulium*, the wings are considerably longer than the body. Assuming that the error is in the body measurement, there is still a discrepancy in the length of wings, those of *S. bipunctatum* measuring about 2 mm.; but it is clear that the species can not be kept separate on this difference alone. As to the distributional data, Miss Joan's specimens are from Alpachiri, in the province of Tucuman (Argentine), and the others are from the Rio Charape in eastern Peru. Both localities are on the eastern slopes of the Andes and not too remote from each other.

In closing a word should be said concerning what Miss Joan calls "autohemorrhæa" in *Simulium dinellii*. Mr. Dinelli, who observed the insect in nature, communicated to her the following observation: "I have seen that as soon as they begin to swallow blood they expel a clear liquid, which, at intervals, they project backwards, forming a globule which gradually evaporates; it appeared to me that the discharged liquid was an overlarge quantity and that it could not have been contained in the very flaccid abdomen; I suppose that during sucking the separation of the serum from the red corpuscles takes place and that the former is immediately expelled."¹ Miss Joan expresses the belief that the liquid discharged by the *Simulium* is its own blood and that the phenomenon is comparable to the "bleeding" such as occurs in certain Coleoptera at the femoro-tibial articulation. There can be little doubt, however, that the liquid discharged was contained in the digestive tract and was not from the body cavity. A similar phenomenon has been observed in certain mosquitoes, and here the liquid is ejected to make room for the newly imbibed blood.

¹ Joan, l. c., p. 383.

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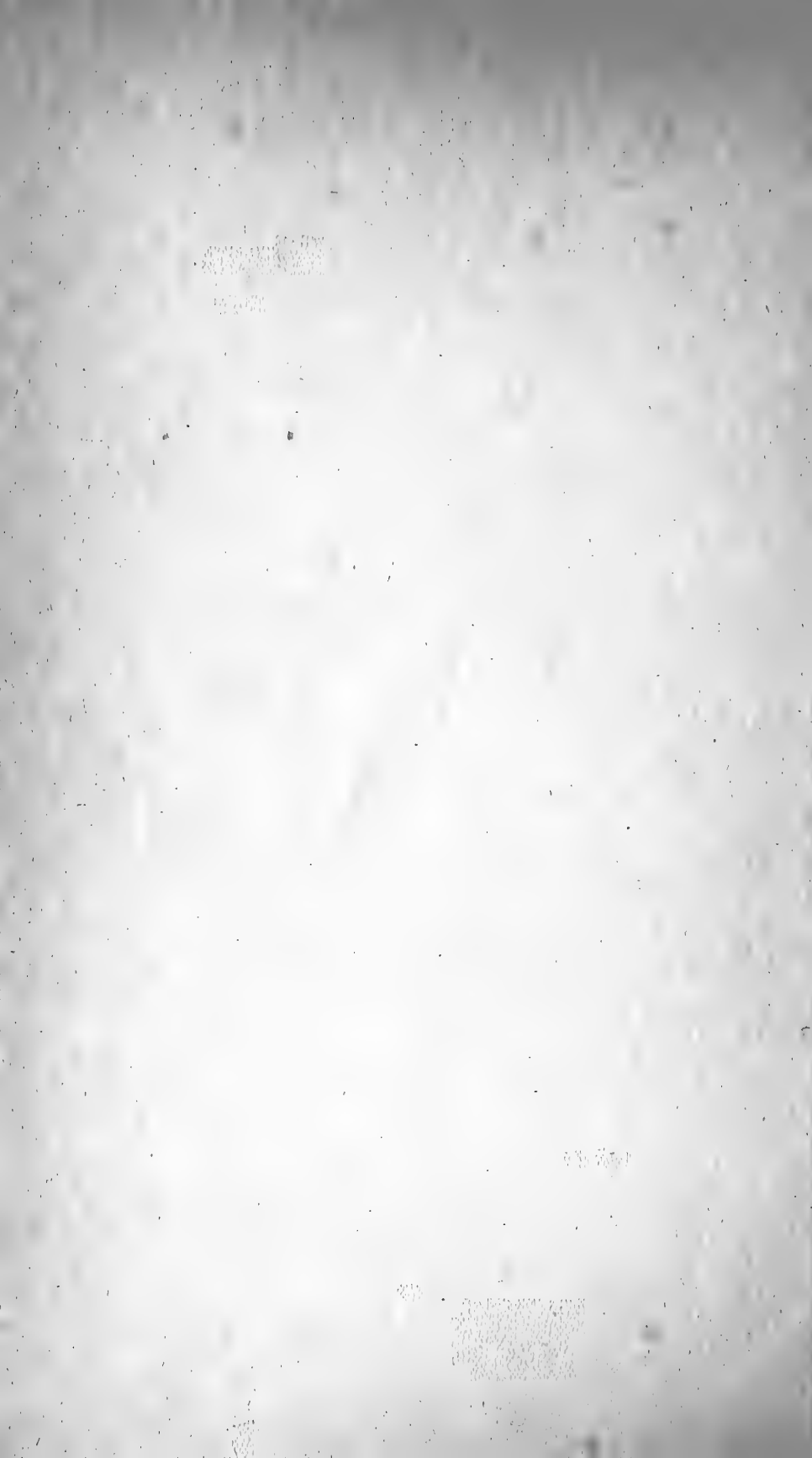
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INSECUTOR INSCITIZÆ MENSTRUUS

A MONTHLY JOURNAL OF ENTOMOLOGY

Vol. II

JANUARY, 1914

No. 1

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Insecutor Inscitiae Menstruus

Vol. II

JANUARY, 1914

No. 1

A NEW GRACILARIA ON AZALEA

(*Lepidoptera, Gracillariidæ*)

By AUGUST BUSCK

Gracilaria azaleæ, new species.

Second joint of labial palpi light golden yellow, terminal joint yellowish white with the tip blackish brown in front. Face silvery white, iridescent. Head and thorax light golden yellow, mixed with dark purple. Forewings dark purplish brown with a large yellow costal area, beginning at basal fourth and reaching, attenuated, to just before apex; the yellow area is broad at its basal fourth, extending from this space down to the fold, but it becomes abruptly narrow at the middle of the cell and from there outward covers less than a third of the width of the wing; the yellow area is, however, not very sharply limited except toward base; the dark purple part is more or less sprinkled with yellow scales in some specimens, so much as to make it the dominant color; on the extreme costal edge is a series of minute purplish black dots. Cilia dark purplish brown. Hindwing dark purplish fuscous. Abdomen dark silvery fuscous above with yellowish white underside. Legs dark purple. Tarsi white with narrow black annulations at the joints; tibiæ on middle legs somewhat thickened with scales.

Alar expanse: 11-12 mm.

Habitat: Yonkers, New York, and New Brunswick, New Jersey.

Foodplant: Azalea.

Type, No. 16851, U. S. Nat. Mus.

Received from Dr. E. P. Felt, who has bred a series of the species, March, 1912, from leaf-mining larvæ on azalea, and who has asked me to furnish a name for the species.

It was also lately received from Prof. T. J. Headley, New Brunswick, New Jersey, with the note: "On azalea, imported from Germany."

This suggested that the species might also be imported from Europe, but I am unable to identify it as any described European form, and it is a convenience to have a name for it even though, as is likely, it may prove to be a synonym. The species belongs to the North American group of *G. superbifrontella* Clemens and allies and should be placed between *G. violacella* Clemens and *G. belfragesella* Chambers.

TWO NEW PHYCITINÆ FROM MONTANA

(*Lepidoptera*, *Pyrallidæ*)

By HARRISON G. DYAR

Pinipestis cambiicola, new species.

Close to *P. zimmermanni* Grote, the fore wing being practically identical, except that the scale ridges are less marked, being nearly wanting. Hind wing smooth brownish fuscous in both sexes, a little translucent toward base, not whitish with fuscous border as in *zimmermanni*. Expanse, 28–29 mm.

Cotypes, male and female, No. 18117, U. S. Nat. Mus.; Flathead Reservation, Montana (Hopkins U. S., No. 11565), larvæ in *Pinus ponderosus*, bred July and August, 1913 (C. Heinrich). Also two males, six females with the same data. Also a single male, apparently of the same species, "Larvæ in cones of *Pinus tæda*, issued August 14, 1882," without other data, but presumably bred by A. Koebele from the vicinity of Washington, D. C.

Dioryctria ponderosæ, new species.

Close to *D. abietella* D. and S., the markings coarser, the lines less crenulate; a broad solid black shade preceding the inner line; median shade thicker. Hind wing faintly suffused with gray, leaving a whitish subterminal line and white fringe, the veins gray, but not conspicuously so as in *abietella*. Expanse, 26–28 mm.

Cotypes, male and female, No. 18118, U. S. Nat. Mus.; Lamedeer, Montana (Hopkins U. S., No. 11555), larvæ in *Pinus ponderosus* (Jos. Brunner); American River, California (Hopkins U. S., No. 11557a), larvæ in *Pinus ponderosus* (J. M. Miller). Also one female, presumably the same but much darker, both basal and terminal spaces filled in with brown-black and the median shade very broad and heavy, Missoula, Montana (Hopkins U. S., No. 11508), in *Pinus ponderosus* (Jos. Brunner).

THE CHESTNUT BASTMINER¹

(Lepidoptera, Tineidæ)

By AUGUST BUSCK

Ectoedemia phleophaga, new species.

Palpi light yellow. Face and head dark ochreous. Antennæ blackish fuscous with narrow ochreous annulations and with large, ochreous white eye-caps. Thorax dark bluish fuscous. Forewings dark bluish fuscous, on the outer half irregularly dotted with black, several of the large scales being tipped with black; a large but poorly defined light

Fig. 1.—Venation of *Ectoedemia phleophaga* Busck.

ochreous costal patch at apical third and a similar poorly defined ochreous patch opposite it on the dorsal edge. Cilia light ochreous fuscous. Hindwing and cilia light ochreous fuscous; in the female of normal form; in the male with costa sharply excised from the middle with only one large bristle at base and with a long, light ochreous hair-pencil at the base of costa, reaching to the middle of the wing. Abdomen light golden fuscous. Legs golden on the inner side, blackish fuscous exteriorly. Alar expanse, 9–10 mm.

Habitat: Falls Church, Virginia.

Type, No. 16700, U. S. Nat. Mus.

Closely allied and identical in structure with the other species of this genus feeding on chestnut, the gall-making *Ectoedemia castaneae* Busck, but larger and with darker wings; the light colored head and abdomen easily distinguish it from this species.

The larva, which was first discovered by Mr. F. C. Craighead, lives in the lower layer of the bark on chestnut just above and encroaching

¹ This is the species referred to by A. G. Ruggles in Science of Dec. 12, 1913, as having an important bearing upon the spread of the chestnut bark disease.

The mine is figured in the Report of the State Forester of Massachusetts on the Chestnut Bark Disease, fig. 1, 1912.

upon the cambium; the mine is a slender serpentine, a few millimeters broad and several inches long, often doubling upon itself and broadening out to twice or more in width in early spring, when the larva reaches maturity; in April and early May the full-grown larva leaves the bark and falls to the ground, where it makes a closely woven, reddish brown cocoon among the rubbish, often boring down a few inches in the loose surface soil to find a suitable moist place on the underside of an old leaf or twig. The cocoon is oval, flattened, about 2 by 3 millimeters in diameter and $1\frac{1}{2}$ millimeters thick.

The imagos, which were reared at the Falls Church, Virginia, Forest Insect Station by Messrs. T. E. Snyder, Carl Heinrich, and the writer, issued from September 7 to September 25.

The larva is typical of the genus, without true legs or prolegs, but with traces of rudimentary prolegs on second and third thoracic segments and on all the abdominal segments except the two penultimate segments; none of these slight processes has any hooks; when full grown it is white with brown mouth parts; on first thoracic segment are two dorsal, brown, chitinized lines indicating the outer edges of a thoracic plate and one broad, rectangular, brown sternal plate; on the last abdominal segment are two diverging, brown, chitinized lines on the upper side indicating the outer edges of an anal plate; two similar chitinized ventral lines and two conspicuous brown apodemes, starting, one on each side, from edge of the anus.

FOUR NEW LEPIDOPTERA FROM BRITISH GUIANA

By HARRISON G. DYAR

HESPERIIDÆ

Lerema mooreana, new species.

Blackish brown; head with dull ochreous hairs, the fringe of the wings light. Male stigma oblique, dull black; three minute costo-subapical dots and one above vein 3. Female with the dots larger, a quadrate spot above vein 2 and a smaller one above vein 1, white but not hyaline. Below washed with dull ochreous, disk of fore wing black; spots repeated, the hind wing with a row of five faint pale spots between the veins near the middle, oblique, the upper spot retracted. Expanse, male, 28 mm.; female, 30 mm.

Similar to *L. accius* Smith and Abbot, but the female with an additional white spot and the underside of the wings differently marked.

Cotypes, two males, two females, No. 18114, U. S. Nat. Mus.; Georgetown, British Guiana, from larvæ on blades of sugar cane (H. W. B. Moore).

***Atrytone gladolis*, new species.**

Male: Forewing largely yellow, veins and broad outer border blackish; an irregular band covering median vein to vein 1, where it is blotched, rises into the cell and projects from its end at vein 5; hind wing with the disk only fulvous-yellow, crossed by black veins. Expanse, 32 mm.

Female: With the black markings broader. Beneath, the forewing as above at base, apex all fulvous-ochraceous. Hindwing of the same color, a broad black ray before the inner margin. Expanse, 34–36 mm.

Cotypes, one male, three females, No. 18115, U. S. Nat. Mus.; Non Pareil Plantation, British Guiana, larvæ on leaves of sugar cane (H. W. B. Moore).

Nearest to *A. mella* Godman and Salvin.

***Atrytone heberia*, new species.**

Male: Forewing brown-black; costa fulvous to end of cell; three costo-subapical fulvous spots, a dash above vein 4, a wedge above 3, a rectangular spot above 2 and a narrow one above 1. Hindwing with five wedge-shaped spots between veins and one in lower part of cell. Below, forewing largely fulvous, inner area shaded with black and discal veins black. Hindwing yellow, with broad black ray before inner margin. Expanse, 29 mm.

Female: With the costa only slightly yellow; spots white and more quadrate than in the male, except the one above vein 1 which is small and yellow. Hindwing with the spots yellow and small, the one in the cell obsolete. Below, the black of forewing spreads over the quadrate white spots. Hindwing largely suffused with dull gray, the spots faintly repeated. Expanse, 33 mm.

Cotypes, two males, one female, No. 18116, U. S. Nat. Mus.; Non Pareil Plantation, British Guiana, larvæ on blades of sugar cane (H. W. B. Moore).

LIPARIDÆ

***Trochuda postropæa*, new species.**

Forewing pale creamy brown, the veins prominent and a little lighter; two brown lines across the wing, oblique, the inner curved toward base

on vein 1, the outer similarly curved just above the inner margin; fringe brown tipped. Hindwing white.

Cotypes, two males, three females, No. 18113, U. S. Nat. Mus.; St. Jean and St. Laurent, Maroni River, French Guiana, October, November, and December, 1904; Omai, British Guiana (W. Schaus).

Similar to *T. pura* Walker, but the forewing not white.

NOTES ON CERTAIN CALIFORNIAN LEPIDOPTERA

By W. S. WRIGHT

Oncocnemis nita Smith.

I recently found the original description of this species while arranging my literature and was led to examine my specimens of *O. augustus* (?) through Professor Smith's reference to the likeness of the two.

I studied 39 specimens—15 females, 24 males. The females are uniformly smaller, 27 to 31 mm. with an average of a little less than 29 mm. The males measured 26 to 36 mm. with an average of 31.50 mm.

Two of the specimens examined were identified by Professor Smith as *O. augustus* during the year 1909. They are the ones he speaks of in his note as having been "received from Mr. George Field bearing the number 71." The two specimens are quite gray in color and when placed beside fresh specimens appear to be badly faded. They are also badly rubbed. Their measurements are, for the male 29 mm., for the female 36 mm. Beside them are also two other specimens, likewise male and female, taken at the same time and in the same locality. These two latter specimens agree exactly with the description of *nita*, the color being perhaps a trifle deeper.

Thirty-five of the specimens examined were captured in 1911 between September 22 and October 15, all in one locality, the crest of a hill about four city blocks in extent and about three-fourths of a mile eastward from the first locality. These specimens run a little smaller than the four above mentioned but do not differ in maculation.

On the whole the general color of the primaries is nearest to clay color (R. v. 8). In several specimens a suspicion of tawny (R. v. 1) appears and one specimen is suffused with tawny to such an extent that it appears to be a faint red-brown.

The lines are practically as described. The orbicular varies from

"almost round" to almost oval, is oblique, the white ring is in some specimens a mere line, in others covering nearly three-fourths of the spot, often the yellowish or pale fuscous filling is simply a darker dot or a line. The reniform is much like the orbicular in coloring.

The median and subterminal shades are fairly well defined in all specimens, quite prominent in the fresher ones. The veins of the primaries are more or less distinctly outlined with white scales, the fringe is cut with white at the ends of the nervures. The fringe of the secondaries is white with a shadowy line near the outer edge.

It is rather unfortunate that Professor Smith described the species from such poor material, since his diagnosis is thereby made more or less misleading. He certainly was mistaken in saying that his *nita* was received in association with *augustus*. The latter insect does not occur in San Diego or its immediate vicinity.

Hemileuca electra Wright.

In Entomological News, vol. xxiii, Dr. Watson, of Manchester, England, describes an aberration of *H. electra* as *H. rickseckeri*. It occurs to me that some years ago I bred over 200 specimens of this insect and produced several very dark specimens in both sexes. The matter interested me and I made notes of the circumstances attending the fact.

After the larvæ had pupated I sifted them out of the dirt and put them into a cage in the cellar for the winter. In the spring they were covered loosely with earth and placed in a warm spot out of doors. They began to emerge in July. After a number had emerged the unusual happened—a cold rain—and the remaining pupæ became thoroughly chilled. Many of the pupæ were lost and those that did emerge came either very dark or crippled. The following year I tried the same experiment with *Datana robusta*, chilling the pupæ with cold water, and produced the same result, getting specimens without markings, dark and unicolored. Some correspondence on the subject brought out the fact that the phenomenon had been noticed by others.

I have collected and bred *H. electra* for about seven years, having handled more than 600 specimens in that time. I have before me now nearly 400 specimens bred and collected by the late L. E. Ricksecker, whose name Dr. Watson has given to his aberration, and I have yet to see the first aberration except as noted. My conclusion is, therefore, that the species is constant and that this or any other aberration is due

wholly to artificial conditions. Dr. Watson's specimen must have emerged from a chilled pupa. The form is interesting only in that it shows what abnormal conditions may do to a "perfectly good bug."

Tetanolita greta Smith.

A study of ten specimens in my own collection shows that the lateral bristles of the male antennæ are quite strong, somewhat more so than in *palligera*, which is the only species I have at hand for comparison. The inferior tufts are long, nearly equalling the lateral bristles. The antennal tuft is large, the hairs long, scarcely appressed, in some specimens having a tendency to become erect.

Alar expanse, 23–25 mm. March to August.

Taeniocampa occluna Smith.

The type of this species is a male taken by Professor Cockerell in New Mexico, May 9, 1900. Professor Smith says in a note that the specimens stood in his cabinet for nearly nine years awaiting additional material. Now the "additional material" was furnished by Mr. Geo. Field from San Diego, Cal. Upon receiving this material Professor Smith described the species, labeled two specimens as cotypes, and returned them to Mr. Field. One of these cotypes is now in my collection.

An examination of the date labels shows that the species flies in May, September, October, and November, evidently not in large numbers, as eight years of collecting has only produced five specimens for my cabinet. Females expand 30 mm.

A NOTE ON PHOBOLOSIA AND MELANOMMA

(*Lepidoptera*, *Noctuidæ*)

By HARRISON G. DYAR

Phobolosia Dyar was described in the *Arctiidæ*, but lately placed in the *Noctuidæ*, subfamily *Acronyctinæ*, by Hampson. The type species is without metallic scales, but others, since discovered, exhibit such scales on wings or abdomen, suggesting very much the genus *Melanomma* Grote. I give below a list of the known species.

Melanomma Grote was described in the *Geometridæ*, but later referred to the *Noctuidæ* (*Can. Ent.*, xxx, 257, 1898). In Bulletin 52, U. S. Nat. Mus., it was placed in the "pseudodeltoids." According to

Hampson's latest tables, I make it fall in the Hypeninae (= Deltoids), so it is probably not at all related to *Phobolosia*. I mention it only for the similarity of ornamentation.

PHOBOLOSIA Dyar

TABLE OF THE SPECIES

Palpi with fringe of long hair in front; third joint short.

Fore wing with broad brown shade before middle . . . *anfracta* H. Edwards

Fore wing with narrow metallic coppery band before middle . . . *aurilinea* Schaus

Palpi with fringes of moderate length or short; third joint long.

Fore wing without black discal dot *mydronotum* Dyar

Fore wing with black discal patch.

This patch large, from subcosta nearly to vein 2 . . . *grandimacula* Schaus

This patch small, not reaching subcosta nor below vein 3 . . . *brimleyana* Dyar

Phobolosia anfracta Hy. Edwards.

Nola anfracta Hy. Edwards, Papilio, i, 12, 1881.

Roeselia anfracta Hampson, Cat. Lep. Phal. Brit. Mus., ii, 73, 1900.

Celama anfracta Dyar, Bull. 52, U. S. Nat. Mus., 351, No. 4051, 1903.

Phobolosia reincarnata Dyar, Proc. Ent. Soc. Wash., x, 52, 1908.

Phobolosia reincarnata Hampson, Cat. Lep. Phal. Brit. Mus., ix, 527, 1910.

Described from the Yosemite Valley, California. I have specimens from San Diego, California (G. H. Field), West Riverside, California (J. J. Rivers), southern Arizona (O. C. Poling), Provo, Utah (T. Spalding), and Kerrville, Texas (H. Lacey). Dr. William Barnes called my attention to the identity of *reincarnata* with *anfracta*, which I verified by an examination of Edwards' type in the American Museum of Natural History in New York.

Phobolosia aurilinea Schaus.

Phobolosia aurilinea Schaus, Ann. Mag. Nat. Hist., (8), ix, 208, 1912.

Only the single female type from Costa Rica is known to me.

Phobolosia mydronotum Dyar.

This will be described in my forthcoming Panama report, now in press.

Phobolosia grandimacula Schaus.

Phobolosia grandimacula Schaus, Ann. Mag. Nat. Hist., (8), viii, 211, 1911.

Two specimens from Costa Rica are before me and ten from Panama.

Phobolosia brimleyana, new species.

Gray; fore wing with dense metallic black thick strigæ; lines blackish, rather approximate, smooth, the inner line somewhat indistinct, the outer slightly excurved over cell; a round, deep black patch at the end of the cell; subterminal line indicated, pale, wavy; black costal dashes before the apex, continuing the narrowly broken black terminal line. Hind wing gray with black terminal line as on fore wing. Tip of abdomen metallic black. Expanse, 14 mm.

Type, female, No. 18166, U. S. Nat. Mus.; Raleigh, North Carolina, September 8, 1907 (C. S. Brimley).

The species is close to *grandimacula* Schaus, which is rather unexpected, considering the distribution.

NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

Director of Entomological Stations, Lima, Peru

(Continued from Vol. I, page 148)

It is probable that *Tropidopsis* and *Paragymnomma* will prove to possess colored maggots. Perhaps all of the spinelike macrochaetae forms will show such maggots. *Gabanimyia* has subspinelike macrochaetae and colored maggots somewhat like those of *Eugymnochaeta*. Thus there will probably prove to be in the *Pyrrhosiinae* a series of groups of colored maggot forms, some with spinelike macrochaetae and some without, as occurs in the *Hystriciidae*. It is believed that none of these has the leaf-larviposition habit.

Heretofore these flies have been quite easily distinguished from the *Hystriciidae* in general by their much less salient epistoma, in marked contrast to the older and better known forms of that family, but many recently discovered forms that appear to be referable only to the *Epalpini* show the same type of epistoma. It further develops that certain types of *Pyrrhosiinae* exist with a remarkably projected epistoma, quite equalling that of any *Hystriciid* and surpassing many of them. So far these types appear to be restricted to the high altitudes of the Andes, above 11,000 or 12,000 feet. They can be separated from the *Hystriciidae* only on uterine and maggot skeleton characters. The *Pyrrho-*

siinae are to be distinguished by their tubular and not straplike uterus, as well as usually by the characters of the cephalopharyngeal skeleton and sometimes the integumental platelets of the first-stage maggot. In this connection it is important to note that a very peculiar dolichocephaly prevails in several groups of muscoid flies in the high Andean altitudes. The oral profile is especially elongated, the epistoma being much produced. It is to be noted also that the costal spine is usually very long. These characters are found in *Andinomyia*, which is proved by dissection (TD4117, 4124) to belong to the *Hystriciidae* on its straplike uterus; in a new genus of *Masiceratidae* belonging in or near the *Salmaciinae*; and in various types of *Pyrrhosiinae*, as *Trichophoropsis*, *Echinopyrrhosia*, *Dolichostoma*, etc., all showing tubular or subtubular uterus in contrast to straplike. Until they were dissected these *Pyrrhosiine* types were supposed to be *Hystriciidae*. *Oestrohystricia* is another example of high Andean dolichocephaly, and may belong to the *Pyrrhosiinae*. Many of the forms herein described were at first wrongly referred by me to the *Hystriciidae*, but several were found on dissection to show a tubular uterus and this discovery led to a critical comparison of the external adult characters of all the forms possible and dissection of such as were available in the female. It was found that the *Trichophora* and *Copecrypta* groups show *Pyrrhosiine* affinities on their tubular uterus, and it is thus seen that Brauer and von Bergenstamm rightly included them in their *Pyrrhosiidae*. *Bombyliomyia* and *Melanophrys* seem to belong to the *Pyrrhosiinae* on first-stage maggot characters. Probably the genera *Corpulentosoma*, *Eurythiopsis*, *Huascaraya*, *Fabriciopsis*, *Euhystricia*, *Eucorpulentosoma*, and *Epalpellus* will be found on dissection to be *Pyrrhosiine*, and I have so placed them in this paper. *Eujurinella* and *Hystriciopsis* show a tubular uterus, as does a species which I refer to *Parepalpus* (TD3949—Uruhuasi). *Dolichostoma*, described by me in 1912 as a *Hystriciid*, is now found on dissection to be *Pyrrhosiine* (TD4122). It is probable that *Oestrohystricia* and *Ecuadorana* will be found to have tubular uterus. From what has been said it is at least apparent that extremely close similarities exist between these colored maggot and spinelike macrochaetae groups of *Pyrrhosiine* flies and the family *Hystriciidae*. The question is where is the line of separation to be drawn. Do the forms with projected epistoma and tubular uterus properly belong with the *Pyrrhosiinae*, or is the epistomal character of greater weight than the type of the uterus? These questions can only be

answered by an exhaustive comparative study of the maggot and especially the cephalopharyngeal skeleton characters in all these flies and their near relatives. It would seem that, if any of the tubular uterus forms are to be referred to the *Hystriidae*, the latter family should include all colored maggot forms in which the integumental platelets are present. Perhaps this will prove the ultimate solution of the matter based on actual relationships.

Family EXORISTIDAE

Subfamily PYRRHOSIINAE

Tribe APHRIINI

Neaphria, new genus.

Differs from *Rhamphina* in facial profile being as long as frontal, eyes large, parafacials much narrower, no orbital bristles in male, no discal abdominal macrochaetae, epistoma very prominently produced. Differs from *Aphria* in second arisal joint being no longer than wide, proboscis greatly elongated, first and third veins bare (only two or three bristles at base of third). Description is from male only.

Arista is bare, facialia bare, parafacials bare, frontal bristles descending to arisal insertion, eyes bare, cheeks of male about one-fourth eye-height, proboscis setiform and reaching nearly to tip of abdomen; palpi slender, cylindrical, long, reaching oral margin; male front averaging width of one eye, parafrontals of male with fine hairs in two rows or so outside frontal row of bristles, strong pair of proclinate divergent ocellar bristles, inner vertical bristles not decussate; second antennal joint slightly elongate, third about three times as long as second, arista thickened on basal third; parafacials below about width of parafrontals above, vibrissae well removed from oral margin.

Three sternopleural and three postsutural bristles; scutellum with a long but weak decussate apical pair of bristles, a longer strong pair next them, a strong pair of decreased length outside latter, and a weak discal pair. First abdominal segment with no median macrochaetae, second with a median marginal pair, both first and second with lateral marginal, third and fourth with marginal row, all the macrochaetae long and strong. Costal spine atrophied, fourth vein bent roundly at oblique angle; first posterior cell narrowed, narrowly open or nearly closed a little before wingtip, bend of fourth vein well removed from wing margin; hind cross-

vein nearer bend of fourth, subsinuate. Legs elongate, male claws and pulvilli long.

Type, *Neaphria dexina*, new species.

***Neaphria dexina*, new species.**

Length of body, 9 mm.; of wing, 8 mm. One male, Chosica, Peru, 2,800 feet, October 8, 1913, indoors.

Head wholly silvery-white; antennae, arista, and frontalia blackish. Palpi reddish-yellow. Thorax silvery, shading to ashy, two narrow pre-sutural median vittae, two wide broken outer vittae. Scutellum pale yellowish pollinose, bare of bristlets from insertion of discal bristles to apex. Abdomen and legs yellowish-red, hind edges of second and third segments and tarsi blackish, abdomen silvery pollinose, third and fourth segments above and median line of second cinereous. Wings clear; tegulae rather colorless, watery, faintly tinged with fuscous.

This species looks exactly like the common *Rhynchodexia* sp. of the coast region and foothills of Peru, having same form of body and same elongate legs, with almost the same coloring throughout. It is not until the facial plate is examined that the distinctness of the form is realized, though the bare arista, extremely long proboscis, and absence of discal abdominal bristles will also distinguish it readily.

Tribe VORIINI

***Xenoplagia*, new genus.**

Wing characters and certain other characters of *Voria*, but not belonging in that subtribe. Description is from female only. Front and face of female nearly equilateral, only slightly narrower at vertex, equal to one and one-fourth times width of one eye at base of antennae but only about width of one eye at vertex. Eyes almost bare, only very faintly and sparsely hairy, descending fully as low as vibrissae, latter on oral margin which is cut off and only faintly prominent. Cheeks very narrow, not over one-eighth eye-height. Facialia practically bare, only a few weak bristles and hairs next vibrissae. Parafacials greatly narrowed below, running into the orbit, widening gradually above, bare save for the single downwardly directed macrochaetae on level with arisal insertion and in line with frontal bristles. Parafrontals each hardly over one and one-half times width of frontalia, with a few fine hairs, the two strong receding inner orbital bristles in line with the more or less decussate

frontals, the latter numbering only four pairs. Three strong proclinate outer orbital bristles. A weak strongly divergent pair of ocellar bristles inclined slightly forward. Inner vertical bristles about same strength as inner orbitals. Lowest frontal bristle nearly as low as end of second antennal joint, latter elongate and rather more than half as long as third joint; arista microscopically pubescent, thickened on about basal third, basal joints short. Palpi well developed, thickened on apical half; proboscis short and fleshy.

Three sternopleural and three postsutural bristles. Scutellum with two strong lateral pairs of bristles, a strong decussate subapical pair, a short erect straight pair between last, and no discal. First abdominal segment with lateral marginal and discal but no median macrochaetae; second segment with lateral marginal and median subdiscal but no median marginal; third segment with marginal row of about four on each side but none in middle, the median marginal represented only by a strong discal or subdiscal pair; anal segment with marginal and subdiscal rows, and a strong median discal pair. All the tibiae spined, spines of middle tibiae very strong. Claws of female not longer than last tarsal joint. Apical cell open, ending well before wingtip but rather nearer to same than to end of second vein. Fourth vein continued in short stump, apical crossvein gently bowed in; hind crossvein sinuate, about parallel with hind wing-margin, distinctly nearer to apical crossvein than to small crossvein. First vein bristly to tip, third bristly to end of second vein, fifth bristly halfway to hind crossvein. Costal spine almost atrophied.

Reproductive habit, larviposition of white maggots on or near host.

Type, *Xenoplagia setosa*, new species.

***Xenoplagia setosa*, new species.**

Length of body, 8.5 mm.; of wing, 6 mm. One female taken on flowers of *Philibertella flava*, Cañada de Saman, tributary to valley of Rio Chira in northwestern Peru, February 14, 1912.

Entire front, including frontalia and ocellar triangle as well as upper orbits, pale golden or brassy pollinose, the frontalia only faintly differentiated in color in some views. Whole face, including parafacials, cheeks, and lower orbits, silvery. Antennae blackish, the tips of first and second joints pale. Palpi reddish-yellow. Occiput silvery-cinereous, with sparse short grayish pile. Pleurae silvery; thoracic dorsum silvery with a faint brassy tinge, the usual four vittae narrow and rather delicate. Abdomen

shining black, with silvery pollen showing distinctly to faintly on second and third segments according to lights, anal segment showing practically none and first segment only below, hind borders of second and third segments with little. Legs black, front femora silvery on outside. Wings clear, slightly smoky on costal portion. Tegulae white, faintly smoky-yellowish on border.

Type, TD4072 (fly and dissection of uterus).

The abdomen of type was slit and part of uterus extracted. The uterus is subtubular, not strap-like, and the elongate macrotype eggs are irregularly arranged therein as in the *Paraplagiina*, to which subtribe the genus probably belongs. The eggs show development of embryo, but the cephalopharyngeal skeleton of the maggot is undeveloped.

Tribe GYMNOCHAETINI

Gymnochaetopsis, new genus.

Approaching *Eugynochaeta* in external characters, the habitus of head very similar; the resemblance especially in antennae, facial characters, and thickly-hairy eyes most striking. *Eugynochaeta* male lacks the outer vertical bristles, the male front at vertex is more narrowed than in the present genus, the female front is a little narrower, the frontal bristles extend a little lower, the cheeks are not quite so broad, and the palpi are well developed, bowed and well thickened on apical half; while there is no stump at bend of fourth vein, there are only three lateral pairs of scutellar bristles, the apical decussate scutellar pair is not so elongate, and the median discal abdominal macrochaetae are stronger. Otherwise *Eugynochaeta* is externally closely similar to the present genus, except that the latter has no metallic green coloration whatever.

Front of female at vertex about equal to width of one eye, from vertex the front and face evenly widening to lower corner of eyes where the facial width is at least twice as great as that of vertex; front of male at vertex about four-fifths the width of one eye, remaining same width on posterior one-third and then evenly widening. Inner and outer vertical bristles present in both sexes, the inner longer and strongly decussate. A pair of proclinate ocellar bristles. Only one pair of inner orbital bristles in male in line with frontals, but in female the next pair of bristles is reclinate unlike the remaining frontal bristles. Female with two proclinate outer orbital bristles, male with none. Frontal bristles descending not quite to end of second antennal joint. Parafacials bare, but little wider

above than below; facialia bare except three or four bristles close to vibrissae. Cheeks of male a little less than one-half eye-height, being rather more than two-fifths; those of female a little narrower in proportion, being about or hardly two-fifths. Parafrontals slightly or hardly wider than frontalia in female, hardly as wide behind in male, with fine sparse hairs. Second antennal joint rather elongate; third from hardly twice to slightly more than twice as long, but little longer in male than in female, flattened or compressed laterally, wide, not bowed on front edge, rather obliquely truncate apically. Arista moderately long, microscopically pubescent, thickened nearly its whole length only excepting tip, the second joint hardly twice as long as wide. Epistoma prominent, the vibrissal insertion well removed from oral margin and even distinctly above its middle. Facial profile gently receding, the length of head at vibrissae about three-fourths that at antennal insertion. Eyes thickly long-hairy. Proboscis fleshy with large labella, about as long as head-height when extended; palpi rather short, straight, filiform, surmounted by several straight fine bristles.

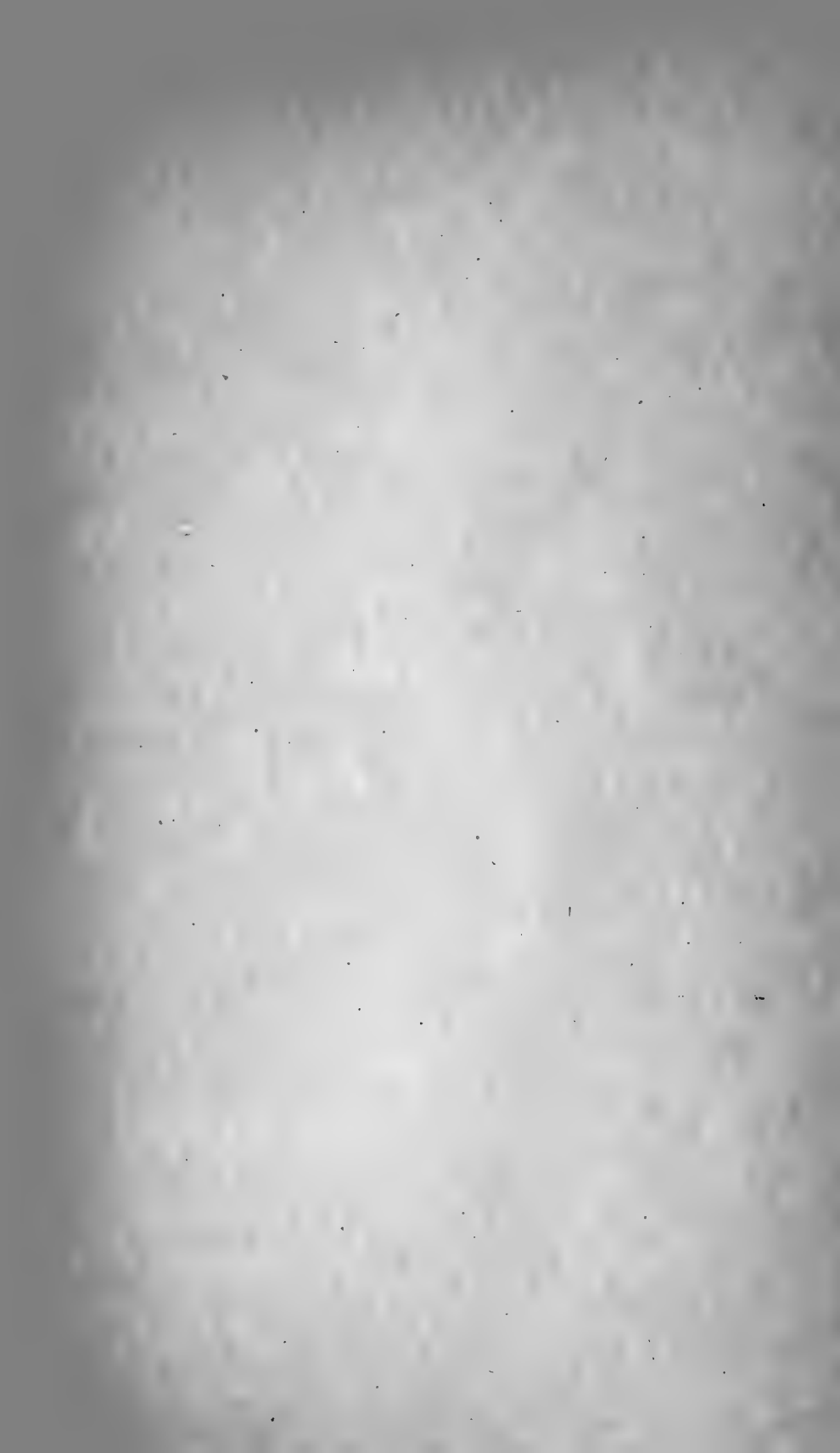
Three sternopleural and three postsutural bristles. Scutellum with four lateral pairs of strong bristles, the two middle ones of each side approximated and both inserted on edge of scutellum like the posterior one, while the anterior one is removed from edge, the extra bristle being the anterior of these two middle ones and shorter than the others; a rather long strongly decussate apical pair about as long as the extra lateral bristle, and a somewhat shorter separated discal pair. Abdominal macrochaetae same in both sexes; a lateral marginal macrochaeta on first two segments, no median on first, small discal median pair on second and stronger discal median pair on third, still stronger median marginal pair on second, marginal row of eight or ten on third, weaker discal row and marginal row on anal segment. Tibiae spined, the spines of middle tibiae strong and long. Claws of female about as long as last tarsal joint, those of male slightly longer. Apical cell narrowly open well before wing-tip; apical crossvein elongate and nearly parallel with hind wing margin, fourth vein continued in long stump, hind crossvein sinuate and well approximated to apical crossvein. Third vein bristly fully halfway to small crossvein. Costal spine short.

Reproductive habit, larviposition probably on or near host.

Type, *Gymnochaetopsis analis*, new species.

(To be continued.)

Date of publication, January 31, 1914.



Insecutor Inscitiae Menstruus

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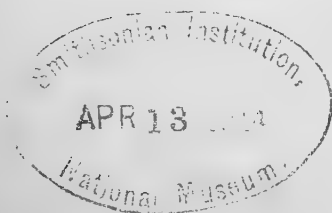


EXHIBIT
JANUARY 1914
1914

Insecutor Inscitiae Menstruus

Vol. II

FEBRUARY, 1914

No. 2

NOTES ON NORTH AMERICAN THYSANOPTERA, WITH DESCRIPTIONS OF A NEW FAMILY AND TWO NEW SPECIES

By J. DOUGLAS HOOD

Suborder TEREBRANTIA

Family MEROTHRIPIDÆ, new family

This family is erected for the anomalous genus *Merothrips* Hood, which contains the single North American species *morgani*. In structure it is intermediate in many respects between the Tubulifera and Terebrantia,¹ and in habitat is very suggestive of the former. As only one genus and species is known, it seems best not to attempt a definition of the family, but rather to emphasize the most striking characteristics, which are as follows:

Antennæ moniliform, without apical stylus and without sense cones, but with a tympanum-like area on segments 3 and 4. Mouth cone semi-circular in form. Pronotum with dorsal sutures. Anterior and posterior femora greatly enlarged. Ovipositor very weak, probably functionless.

***Merothrips morgani* Hood.**

1912. *Merothrips morgani* Hood, Proc. Ent. Soc. Wash., Vol. XIV, p. 132, Pl. V, figs. 1-3.

One female was taken by Mr. W. L. McAtee and the writer under dead willow bark on Plummer's Island, Maryland, October 5, 1913; and on January 16, 1914, another female was found by Mr. R. C. Shannon, hibernating in a bird's nest, in Potomac Park, Washington,

¹Dr. H. Karny, of Vienna, in a recent letter, received since the above was written, says: "Was Ihr Genus *Merothrips* betrifft, so halte ich dieses für sehr wichtig und interessant: nach Ihrer Beschreibung möchte ich glauben, dass es sich um eine neue, zwischen den Terebrantien und Tubuliferen intermediäre Familie handelt."

D. C. The species was previously known only from three females and one male, taken in Illinois and Kentucky.

Scirtothrips brevipennis, new species.

Female: Length about 0.82 mm. General color light yellow ochre, head whitish, prothorax shaded with gray; antennæ brown beyond first segment, bases of intermediate segments gray; legs yellowish gray.

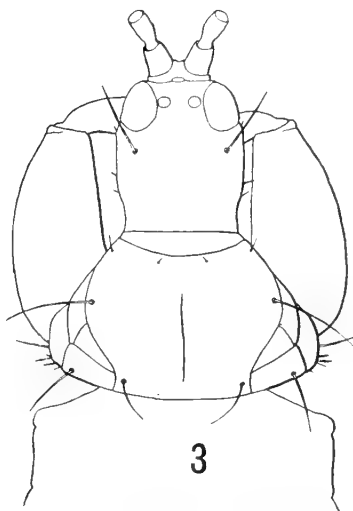
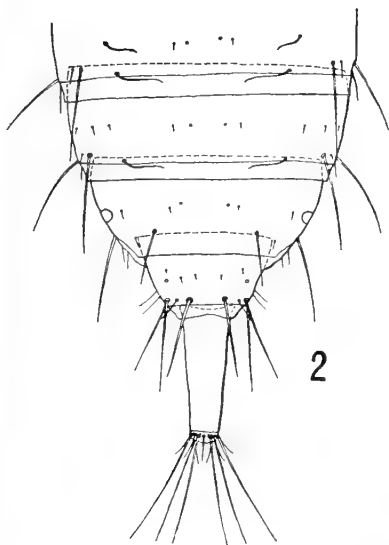
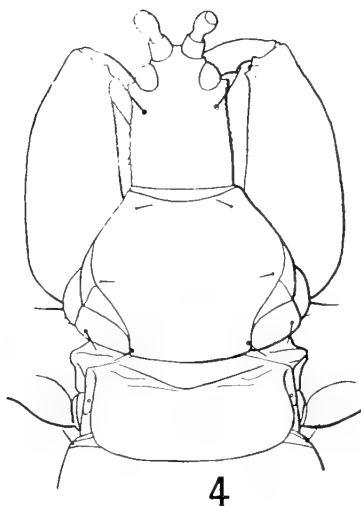
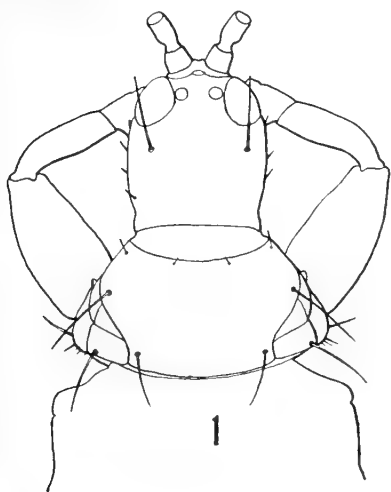
Head twice as wide as long and three-fourths as long as prothorax, rounded anteriorly; frontal costa not visible from above; cheeks slightly arcuate. Eyes not protruding, about three times as long as their distance from posterior margin of head and three-fourths as wide as their interval, setose. Ocelli approximate, opposite center of eyes. Antennæ about 3.2 times as long as head, formed as usual in the genus; segment 1 pale yellow; 2-8 dark brown, the intermediate segments paler basally, 4 and 5 each with a narrow, almost black ring at base. Maxillary palpi 3-segmented.

Prothorax nearly twice as wide as long and about 1.3 times as long as head; ochraceous pigment denser along lateral and posterior margins; pronotum with minute, close, transverse striæ, and about 20 scattered, dark bristles, the pair at the posterior angles much the longest, nearly equal in length to eyes. Pterothorax about 1.3 times as wide as prothorax, ochraceous pigment denser at sides. Wings of fore pair uniform gray in color, hind wings pale, with dark median line; fore wings about nine times as long as greatest basal width exclusive of scale, 2.5 times as long as antennæ and four times as long as width of head; anterior vein of fore wings with about five or six dark bristles in basal half and three dark, nearly equidistant ones in apical half; posterior vein with three similar bristles in apical half.

Abdomen widest at about fifth segment, lemon yellow along middle and at tip, almost raw sienna at sides; bristles dark in color.

Measurements of holotype: Length 0.816 mm.; head, length 0.072 mm., width 0.150 mm.; prothorax, length 0.096 mm., width 0.180 mm.; pterothorax, width 0.240 mm.; abdomen, width 0.242 mm. Antennal segments: 1, 19 μ ; 2, 37 μ ; 3, 43 μ ; 4, 40 μ ; 5, 38 μ ; 6, 43 μ ; 7, 7 μ ; 8, 12 μ ; total length of antenna, 0.23 mm., width at segment 4, 0.017 mm.

Described from eight females, taken on red cedar (*Juniperus virginiana* L.), Plummer's Island, Maryland, May 18, 1913, by W. L. McAtee and the writer.



TRICOTHRIPS

Fig. 1.—*Trichothrips karnyi*, new species, head and prothorax of macropterous female, greatly enlarged; holotype.

Fig. 2.—*Trichothrips karnyi*, abdominal segments 6-10 of macropterous female, greatly enlarged; holotype.

Fig. 3.—*Trichothrips karnyi*, head and prothorax of macropterous male, greatly enlarged; allotype.

Fig. 4.—*Trichothrips flavicauda* Morgan, head and prothorax of brachypterous male, greatly enlarged.

A distinct little species, easily separable from all others of its genus by the antennal coloration and the short wings. At the time of its capture it was abundant on several cedar trees on the island, but was mistaken for a commoner species, the error being detected too late to secure more material.

Haplothrips statices (Haliday).

1836. *Phl. [æothrips] Statices* Haliday, Ent. Mag., Vol. III, p. 442.
1843. *Hoplothrips statices* Amyot et Serville, Hist. Nat. Ins. Hémip., p. 640.
1852. *Phlæothrips flavipes* Heeger, Sitzungs. d. Akad. Wiss., Wien, Vol. IX, p. 127; Tab. XVI.
1883. *Phlæothrips nigra* Osborn, Can. Ent., Vol. XV, p. 154.
1887. *Phlæothrips armata* Lindeman, Bull. Soc. Imp. Nat. Moscou, p. 335.
1895. *Anthothrips statices* Uzel, Monogr. d. Ordn. Thys., p. 237; Tab. III, fig. 26, Tab. VII, figs. 128-130.
1895. *Anthothrips nigra*, idem, ibidem, p. 242.
1902. *Anthothrips niger* Hinds, Proc. U. S. Nat. Mus., Vol. XXVI, p. 188; Pl. VII, figs. 72-75.
1912. *Haplothrips statices* Karny, Zool. Ann., Vol. IV, p. 325.
1912. *Haplothrips niger*, idem, ibidem.

This abundant, destructive species was redescribed by Osborn under the name *Phlæothrips nigra*. The North American examples at hand are inseparable from authentic European ones received from Mr. Bagnall. It is often very abundant in the flowers of clover and the common daisy (*Chrysanthemum leucanthemum* L.), and may possibly have been introduced with the latter plant from Europe.

Trichothrips flavicauda Morgan. (Pl. I, fig. 4).

1913. *Trichothrips flavicauda* Morgan, Proc. U. S. Nat. Mus., Vol. 46, p. 28, figs. 50-54.

One female of this species was taken by the writer at Bluemont, Virginia, August 31, 1913, from a dead branch of papaw; and two females and one male were found by Mr. W. L. McAtee and myself under dead willow bark on Plummer's Island, Maryland, October 5, 1913.

The females agree well with the original description of the species, but the male differs from the description and drawing of that sex in the more acute projections at the side of the eyes, the longer tarsal tooth, and the longer fore femora, the latter just attaining the front of the head. These discrepancies, though great, are probably due to individual variation. A most unusual characteristic of the male seems to have been overlooked, however, by the original describer. This is the presence on the inner

surface of the fore femur of three subapical, triangular teeth, between which, when the leg is flexed, fits a similar tibial tooth—a remarkable structure, known before only in the rather distantly related genus *Hoplandrothrips*.

***Trichothrips karnyi*, new species (Pl. I, figs. 1–3).**

Female (*forma macroptera*): Length about 2.2 mm.; width of prothorax about 0.43 mm. Color nearly uniform light blackish brown, pterothorax and both ends of tibiæ slightly paler; fore tibiæ, all tarsi, articulations of legs, and bases of intermediate antennal segments yellow or yellowish.

Head distinctly longer than wide, rounded in front, noticeably constricted at its insertion into prothorax; dorsal and lateral surfaces with anastomosing lines and several short, stout, conspicuous spines; postocular bristles about half as long as head, pointed. Eyes about one-third as long as head, their axis of greatest dorsal length nearly coinciding with a line drawn from base of first antennal segment to anterior end of gena. Ocelli nearly equidistant, moderately large; posterior pair slightly in front of centers of eyes; anterior ocellus directed forward. Antennæ slightly less than twice as long as head, 8-segmented; segments 3–7 subclavate, pedicellate, 3 about 2.5 times as long as greatest width; 8 lanceolate, subpedicellate; color blackish brown, except apex of 2, basal three-fifths of 3, basal two-fifths of 4, basal third of 5, and pedicel of 6, which are usually pale yellow. Mouth cone very slightly longer than wide, the apical half almost perfectly semicircular in form; maxillary and labial palpi 2-segmented, basal segments very short.

Prothorax trapezoidal, about two-thirds as long as head and (inclusive of coxæ) slightly more than twice as wide as long; all usual bristles present, pointed; anterior marginals minute, midlaterals and the two pairs at the posterior angles subequal, much the longest; coxal bristles four or five in number, the anterior about twice as long as the others, equal in length to anterior angulars. Pterothorax distinctly wider than prothorax, sides straight and converging posteriorly. Wings lightly washed with brown, the hind pair with a median brown line; subapical fringe of fore wings with about 10 interlocated hairs on posterior margin. Legs rather stout; fore femora slightly swollen; fore tarsi with a stout acute tooth usually about as long as width of tarsus.

Abdomen large and heavy, slightly wider than pterothorax, broadly

rounded to base of tube. Tube about three-fourths as long as head, twice as wide at base as at apex, sides straight. Abdominal bristles long, pointed; terminal bristles brown, the longest about equal in length to tube; all other bristles yellow.

Measurements of holotype (*forma macroptera*): Length 2.12 mm.; head, length 0.278 mm., width 0.232 mm.; prothorax, length 0.192 mm., width (inclusive of coxæ) 0.426 mm.; pterothorax, width 0.482 mm.; abdomen, width 0.540 mm.; tube, length 0.222 mm., width at base 0.084 mm., at apex 0.047 mm. Antennal segments: 1, exposed length 42μ , complete length about 60μ ; 2, 72μ ; 3, 93μ ; 4, 87μ ; 5, 76μ ; 6, 69μ ; 7, 62μ ; 8, 51μ ; total length of antenna 0.55 mm., width at segment 3, 0.038 mm.

Female (*forma brachyptera*): Closely resembling the long-winged form. Eyes smaller, about one-fourth as long as head; prothorax larger, about three-fourths as long as head; pterothorax usually equal in width to prothorax.

Male (*forma macroptera*): Length about 1.8 mm. Color and general structure nearly as in macropterous female. Prothorax about 0.9 as long as head; fore femora usually greatly enlarged, attaining or slightly surpassing posterior margins of eyes; fore tarsus with a stout tooth two-thirds as long as eye. Abdomen less stout and more tapering than in female.

Measurements of allotype (*forma macroptera*): Length 1.88 mm.; head, length 0.280 mm., width 0.210 mm.; prothorax, length 0.232 mm., width (inclusive of coxæ) 0.444 mm.; pterothorax, width 0.492 mm.; abdomen, width 0.516 mm.; tube, length 0.204 mm., width at base 0.078 mm., at apex 0.042 mm. Antennal segments: 1, 48μ ; 2, 67μ ; 3, 87μ ; 4, 84μ ; 5, 75μ ; 6, 65μ ; 7, 54μ ; 8, 46μ ; total length of antenna, 0.53 mm., width at segment 3, 0.034 mm.

Male (*forma brachyptera*): Closely resembling the long-winged form of this sex. Prothorax fully as long as the head; fore femora often greatly enlarged, sometimes nearly as wide as head and almost attaining anterior margins of eyes.

Described from 33 females and 17 males, as follows: Plummer's Island, Maryland, May 18, 1913, J. D. H., in burrows of *Elaphidion* sp., immediately under bark of dead hickory twig, 10 macropterous females, 13 brachypterous females, 3 macropterous males, and 9 brachypterous males; Plummer's Island, Maryland, October 12, 1913,

J. D. H., 1 macropterous female under willow bark; Boskydell, Illinois, October 22, 1908, L. M. Smith, from branch of white oak, 1 brachypterous male; Mahomet, Illinois, July 27, 1908, J. D. H., under bark of rotting willow branch, 1 macropterous female, 4 brachypterous females, and 3 brachypterous males; Murphysboro, Illinois, November 6, 1908, L. M. Smith, from branch of bur oak, 1 macropterous male; St. Joseph, Illinois, May 25, 1913, C. A. Hart, from branch of oak, 1 macropterous female and 3 brachypterous females. (One brachypterous male was taken under apple bark at Vienna, Virginia, November 7, 1913, by R. A. Cushman.)

The closest described North American relative of this species is *T. beachi* Hinds, which differs conspicuously in having the tube "fully as long as the head."

I take pleasure in dedicating this splendid species to Dr. H. Karny, of Vienna, Austria, in recognition of his work on this order of insects. He has compared it with *T. ulmi* (Fabricius) and found it distinct.

A REVISION OF THE BRACONID GENUS UROSIGALPHUS

(Hymenoptera, Braconidae)

By J. C. CRAWFORD

1. Marginal cell closed 2
Marginal cell open, the radius failing 11
2. Vertex between ocelli elevated into a pyramidal lobe 3
Vertex between ocelli not elevated into a pyramidal lobe 5
3. Abdomen at apex with two long sharply pointed spines; antennæ 14-jointed;
length about 3.5 mm. *anthomomi* Cwfd.
Abdomen at apex either simple or with two blunt tubercles; size larger 5.5
mm. or more 4
4. Larger 7 mm. more robust; abdomen at apex in female without tubercles,
with tubercles in male; antennæ 16-jointed *armatus* Ashm.
Smaller about 6 mm. more slender; abdomen at apex in female with tuber-
cles; antennæ 17-jointed *barberi*, n. sp.
5. Scutellum posteriorly not strongly elevated 6
Scutellum posteriorly strongly elevated, the elevation sharply pointed 9
6. Smaller 2.5 mm.; cheeks almost impunctate, punctures of head and thorax
small sparse; antennæ 16-jointed *hubbardi*, n. sp.
Larger 3.5 mm. or more; cheeks distinctly punctured, punctures of head
and thorax large; antennæ in all known forms 15-jointed 7

7. Legs black, punctures of the face rather small and separated by about a puncture width *nigripes*, n. sp.
 Legs red, punctures of the face close almost rugoso-punctate 8
8. Face rugoso-punctate, clypeus punctured *robustus* Ashm.
 Face with the punctures distinctly separated, clypeus medially smooth, *punctifrons*, n. sp.
9. Abdomen in both sexes simple at apex *arizonensis*, n. sp.
 Abdomen with two tubercles at apex in both sexes 10
10. Mesopleuræ at lower edge closely rugoso-punctate, medially impunctate, *bruchti* Cwfd.
 Mesopleuræ at lower edges sparsely punctured, medially punctate, *bruchivorus*, n. sp.
11. Clypeus punctured only at base, extremely transverse, the emarginate anterior margin about twice as long as height of clypeus 12
 Clypeus not twice as broad as high, punctured all over *schwarzi* Cwfd.
12. Abdomen at apex with two tubercles *femoratus*, n. sp.
 Abdomen at apex without tubercles *neomexicanus*, n. sp.

***Urosigalphus hubbardi*, new species.**

Male: Length, 2.5 mm. Black, the legs reddish brown, hind legs darker; antennæ 16-jointed, the face very finely and sparsely punctured, the vertex and post-vertex practically impunctate, middle lobe of mesoscutum rather coarsely punctured, at rear rugulose; lateral lobes more finely and sparsely punctured; mesopleuræ, except near margin, impunctate, lower margin closely, coarsely punctured; wings subhyaline, the stigma brown, darker on the costal margin, the veins light brown; abdomen distinctly longitudinally striated, punctate between the striæ.

Type locality, Chiricahua Mountains, Arizona.

One specimen labeled "31.5 H. G. Hubbard Collector."

Type specimen, Cat. No. 18228, U. S. Nat. Mus.

***Urosigalphus barberi*, new species.**

Female: Length about 6 mm., ovipositor about 5 mm. Black, legs, including coxæ, red, the hind tibiæ brown, their tarsi darker; face, including clypeus, closely, coarsely punctured; top of head rugoso-punctate; antennæ 17-jointed, mesoscutum rather finely and sparsely punctured, scutellum with somewhat larger punctures, separated at base from mesoscutum by a row of wide foveæ, mesopleuræ with the lower anterior edge rugose and punctate between the rugæ; the lower margin finely punctured, posterior margin with a row of pits, medial portion impunctate; wings somewhat dusky, the stigma dark brown, veins lighter brown;

abdomen coarsely striate-punctate, tubercles at apex of abdomen small, blunt.

Described from one female from Las Vegas Hot Springs, New Mexico, with the date "10 . 8" collected by Barber and Schwarz.

Type specimen, Cat. No. 18229, U. S. Nat. Mus.

***Urosigalphus nigripes*, new species.**

Female: Length about 4 mm. Black, the legs dark brown, posterior legs almost black; face rather finely punctured, the punctures about a puncture width apart; on vertex the punctures sparser, antennæ broken, only 12 joints remaining; middle lobe of mesoscutum with the punctures slightly larger than on face, posterior part covered by about six large foveæ; lateral lobes with the punctures slightly smaller and somewhat sparser; scutellum rugoso-punctate, the extreme center smooth, with a few small punctures; wings hyaline, stigma brown, veins light brown; posterior face of propodeum surrounded by a strong carina, the superior face with an elevated medial almost circular carina, the surface laterad of this coarsely rugose; abdomen strongly longitudinally rugose, punctured between the rugæ; apically the rugæ becoming indistinct and the punctures coarser; apex of the abdomen without tubercles, ovipositor short, projecting only slightly beyond apex of abdomen.

One specimen with the Bureau of Entomology, U. S. Department of Agriculture note No. 2610°, the note stating that the specimen came from a twig gall on oak collected at Fort Grant, Arizona, the specimen issuing July 27, 1882,

Type specimen, Cat. No. 18230, U. S. Nat. Mus.

The manuscript name used by Dr. Ashmead is adopted.

***Urosigalphus punctifrons*, new species.**

Male: Length about 4 mm. Black, the coxæ dark brown, legs light reddish, the posterior tibiæ somewhat infuscated, their tarsi darker; face with rather fine punctures less than a puncture width apart, the clypeus smooth except at lateral margins and a very few scattered punctures near upper margin; punctures on the vertex somewhat sparser and larger than on face, those on post-vertex slightly larger; antennæ 15-jointed, middle lobe of mesoscutum at sides and rear coarsely rugoso-punctate; medially shiny, finely punctured and with a single row of coarse punctures along median line; extreme anterior portion finely punctured; lateral lobes with punctures about as on disk of middle lobe; scutellum rugoso-punctate;

mesopleuræ, except medially, rugoso-punctate, middle finely sparsely punctured; abdomen rugoso-punctate, basally the rugæ more or less longitudinal, apically the sculpture becomes simply coarsely punctured, the apex without tubercles.

One specimen from Las Vegas Hot Springs, New Mexico, August 18, H. S. Barber, collector.

Type specimen, Cat. No. 18231, U. S. Nat. Mus.

Urosigalphus bruchivorus, new species.

Female: Length about 2.75 mm. Black, the legs, including coxæ, reddish testaceous, coxæ slightly darker, the hind tibiæ at apices and hind tarsi brown; face rugoso-punctate, more closely so on vertex, post-vertex smooth; antennæ 14-jointed; mesoscutum more coarsely rugoso-punctate, lateral lobes with finer sculpture, their disks finely punctured and shiny; parapsidal furrows obscured by the coarse sculpture; scutellum with coarse punctures, those on the median line finer; propodeum with a median carina, posterior face surrounded by a carina, the median carina prolonged into a short spicule where it meets the carina surrounding the posterior face; mesopleuræ with coarse punctures, along the upper portion of anterior and posterior margins rugoso-punctate; wings subhyaline; abdomen coarsely rugoso-punctate, at extreme base forming a few more or less distinct longitudinal rugæ; tubercles at apex of abdomen small, indistinct; ovipositor not as long as abdomen.

Male: Length 2.5 mm. Similar to the female except in secondary sexual characters; sculpture of the face somewhat finer than in female; elevation of scutellum slightly more prominent.

Described from 10 specimens collected by Mr. Albert Koebele and recorded under his note No. 446°. The note in the Bureau of Entomology covering this number states that this material was bred from *Bruchus* sp. in *Prosopis pubescens* collected at Indio, California, and the specimens are labeled San Diego County, California, but Indio is now in Riverside County.

Type specimen, Cat. No. 18232, U. S. Nat. Mus.

Urosigalphus arizonensis, new species.

Female: Length about 3 mm. Black, the legs ferruginous, the hind tarsi brown; face finely rugoso-punctate, vertex coarsely so; antennal furrows extending to posterior face of head, antennæ 14-jointed; middle lobe of mesoscutum rugose, posteriorly becoming rugoso-punctate; lateral lobes anteriorly finely rugoso-punctate, posterior part with finer distinctly

separated punctures; lateral margins of scutellum with coarse punctures, medial line with a few scattered fine punctures; propodeum with a medial longitudinal carina and the posterior face surrounded by a carina, the median carina produced to a small spicule where it meets the carina of posterior face; mesopleuræ except on disk coarsely punctured; wings subhyaline; abdomen coarsely rugoso-punctate, on basal half forming longitudinal rugæ; ovipositor about as long as abdomen.

Male: Length about 3 mm. Similar to the female except in secondary sexual characters.

Described from two specimens from Fort Yuma, Arizona, reared from *Bruchus arizonensis* by Hubbard and Schwarz with the date 12.4.

Type specimen, Cat. No. 18233, U. S. Nat. Mus.

***Urosigalphus neomexicanus*, new species.**

Female: Length about 2.5 mm. Very dark reddish brown, more apparent on sides, dorsal aspect more blackish; face finely punctured, the punctures about a puncture width apart; clypeus with very few scattered punctures; vertex near eyes more closely punctured, in the antennal furrows almost impunctured, post-vertex impunctate; antennæ 14-jointed; medial lobe of mesoscutum anteriorly finely rugose, the disk shiny, sparsely, finely punctured, the lateral lobes finely, sparsely punctured; scutellum rugoso-punctate; mesopleuræ along edges rugoso-punctate becoming finer and sparser centrad leaving the disk smooth and shiny; wings subhyaline, apical half of radius wanting; narrow posterior face of propodeum surrounded by a carina, obscured laterally by the coarse sculpture, the carina not strongly elevated, dorsal middle carina produced to a small spicule; abdomen coarsely rugoso-punctate, on basal half forming more or less distinct longitudinal rugæ; ovipositor about as long as abdomen; apex of abdomen not tuberculate.

Male: Length about 2.5 mm. Similar to the female except in secondary sexual characters.

Described from two specimens collected by Prof. Cockerell at Las Cruces, New Mexico, the female under Cockerell No. 110, the male under No. 112.

Type specimen, Cat. No. 18234, U. S. Nat. Mus.

The manuscript name used by Dr. Ashmead is adopted.

***Urosigalphus femoratus*, new species.**

Female: Length about 2.25 mm. Black, face with fine punctures

about a puncture width apart, the punctures laterally on the vertex closer and slightly coarser, post-vertex medially impunctate, laterally closely punctured; antennæ 14-jointed, middle lobe of mesoscutum rugose, the lateral lobes shiny, indistinctly punctured; scutellum coarsely rugoso-punctate, mesopleuræ mostly smooth, along the lower and front margins coarsely punctured, posterior margin with a single row of deep pits; propodeum with a narrow posterior face surrounded by a carina which is produced to a small spicule medially above; wings hyaline, radius obsolete for slightly more than apical half of second abscissa; legs reddish brown, coxæ dark brown; abdomen coarsely rugoso-punctate, apex of abdomen with two small tubercles; ovipositor slightly longer than abdomen.

Male: Length about 2.25 mm. Similar to the female except in secondary sexual characters.

Described from two females and one male collected in Illinois by Prof. S. A. Forbes, the type with his No. 17243, the allotype 5048, the paratype female 17235.

Type specimen, Cat. No. 18235, U. S. Nat. Mus.

The manuscript name used by Dr. Ashmead is adopted.

A NEW PANTOPHTHALMUS

(*Diptera, Pantophthalmidæ*)

By FREDERICK KNAB

The family Pantophthalmidæ is better known under the name Acanthomeridæ, the change having been made recently in accordance with the rules of priority. The generic name *Pantophthalmus*, which antedates *Acanthomera*, is here used in the restricted sense, as recently defined by Enderlein,¹ the species included having the hind femora unarmed and the face of the female with only a rounded tubercle. To *Acanthomera* are referred those species in which the hind femora bears a thorn before the outer third and the face of the female a stout thorn-like process. I have been unable to reconcile any of the published descriptions with the following species.

Pantophthalmus fastuosus, new species.

Mesonotum dark, with a broad median yellowish gray stripe. Abdomen ferruginous-red in the male, darker in the female. Hind femora

¹Dipterologische Studien, 1, Die Dipteren-Familie Pantophthalmidæ. Zool. Anz., vol. 41, pp. 97-118 (1912).

unarmed. Legs dark reddish brown, the tarsi somewhat lighter colored.

Male: Eyes very large, broadly contiguous toward the antennæ, the frons in the shape of a very sharp wedge with the three closely approximated ocelli protruding at its posterior end. Antennæ blackish brown, the third to ninth joints fused into a broadly triangular mass, the terminal style over twice the length of this, pale yellowish brown and slightly thickened at the tip. Face dark chestnut-brown, the lower portion lighter and with gray pruinosity; deeply grooved along the eye-margins, a short impression just below the antennæ, thickened in the middle nearly to the mouth, a minute shining tubercle in the shape of an inverted V in the middle. Proboscis black. Palpi blackish, the end joint chestnut-brown and not markedly thickened.

Mesonotum dark, with a yellow-gray median longitudinal stripe which in front occupies more than one-third the entire width, but behind the middle is very shallowly excised; median stripe bordered at the sides by narrow, deep velvet-black stripes which broaden toward the anterior margin; sides of disk blackish gray, a black stripe over roots of wings from the transverse suture to near posterior angle. The long lateral ciliation is sooty-brown, the pubescence on the median stripe yellow, on the lateral areas blackish. Scutellum black, dusted yellowish white at base and on the middle. Pleuræ dull brown, with dusky-brown pubescence.

Abdomen dorsally bright ferruginous-red, the lateral margins blackish anteriorly; venter dull black, the last segment reddish.

Legs ferruginous brown; hind femora unarmed, with dense brown ciliation; tarsi lighter ferruginous, the first and last joints on all the legs paler and inclining to yellow. Pulvilli and empodia ferruginous, claws black at tips.

Wings gray marked with yellow; base, costal cell, and median portion of first basal cell smoky brown, another dark shade passes from above outer half of discal cell to costa; three irregular pale yellow zones, one near wing-base, the other two involving the crossveins; a yellow spot on the furcation of the third vein.

Length: Body 28-35 mm.; wing 23-26 mm.

Female: Frons broad, parallel-sided, dark ferruginous, with weak longitudinal wrinkles; ocelli small, on a strongly convex, elongate black tubercle. Antennæ black, pale at tip, of 10 well-defined joints, the third broadest, the succeeding ones progressively narrowed, the terminal one short, slender, and tapered to a point. Face blackish brown, a promi-

nent rounded tubercle midway between mouth and antennæ. Abdomen dark ferruginous shading to black.

Length: Body, exclusive of ovipositor, 35–37 mm.; wing 28–31 mm.

Type, Cat. No. 18236, U. S. Nat. Mus.

Island of Trinidad, four males and one female, bred from larvæ boring in trunk of tree (F. W. Urich); St. Jean, French Guiana, one male (W. Schaus); Ancon, Canal Zone, Panama, one female, June, 1911 (A. H. Jennings).

Apparently closely related to *P. argyropasta*, described by Bigot from Panama, but distinct. The description of that author is insufficient for exact diagnosis. The white deposit which occurs on the abdomen of the Pantophthalmidæ is apparently a secretion similar to that occurring in certain Coleoptera and Homoptera and is present or absent, according to the age and physiological condition of the individual, and therefore cannot be employed as a specific diagnostic. Likewise the abdomen may be either dull or shining, as is shown by the specimens bred by Professor Urich and which are undoubtedly conspecific.

NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

Director of Entomological Stations, Lima, Peru

(Continued from Vol. II, page 16)

Gymnochaetopsis analis, new species.

Length of body, 9 to 10 mm.; of wing, 7.5 to 8 mm. Six females and one male, Mallares and Cañada de Saman, valley of the Rio Chira in northwestern Peru, on flowers of *Spilanthes* sp. and *Philibertella flava*, February 13 and 14, 1912.

Head silvery-white, parafrontals and occiput faintly brassy, occiput with yellowish-gray pile, frontalia pale brownish. Antennæ brownish-yellow; basal half of second joint, front border of third joint, and arista brownish. Palpi brown to yellowish-brown. Pleuræ and thorax silvery with faint brassy tinge above; five rather heavy vittæ, the median one abbreviated in front, the next abbreviated behind, the outer heaviest and interrupted in some lights. Scutellum pale straw-yellowish, dusky at base. First abdominal segment blackish above; anal segment usually wholly yellowish-reddish in female, dusky at base in male; intermediate segments dusky

with a thin silvery pollen, sometimes almost imperceptibly reddish on sides. Legs black, femora silvery on outside. Wings clear, faintly or hardly yellowish near costa; tegulae white.

Type, TD4069 (fly and dissection of uterus).

Cotypes, TD4074 and the other specimens mentioned.

The abdomens of all the females were slit and uterus removed. The uterus is long and coiled, subtubular, not straplike, not slender, filled with elongate whitish eggs arranged regularly in four or five rows; there were no maggots developed in any of the females. Chorion of egg is thin, but shows net-reticulate.

Tribe GYMNO MINI

Eurythiopsis, new genus.

Runs to Brauer and Von Bergenstamm's section *Erigone*, but differs in first abdominal segment not being unusually short, the parafacials being pilose, epistoma only feebly prominent, no ocellar bristles, male abdomen with four segments and genitalia not unusually large. The eyes are densely pilose, and the front tarsi of female are very noticeably dilated. Discal macrochaetae present on second and third abdominal segments. First and second arisal joints are both elongate, about equal in length, about four times as long as wide, the arista being geniculate. Second antennal joint is only slightly elongate, third joint being about two and one-half times as long as second in male and about two and one-fourth times as long as second in female. Cheeks of female are nearly one-half eye-height; those of male are shorter, but over two-fifths eye-height. Female front at vertex is more than greatest eye-width, that of male a little less than or about equal to greatest eye-width. Proboscis about one and one-fifth times head-height; palpi elongate, subcylindrical, widened and flattened on apical third.

Three sternopleural bristles, three postsutural, three postacrostichal, two preacrostichal bristles. Scutellum with two strong long pairs of marginal macrochaetae placed at almost equal distances apart, a shorter third macrochaetae between them on each side; an erect median pair or sometimes three bristles close to hind margin, and two discal pairs, none being truly spinelike. Abdomen ovate, with ordinary macrochaetae; a median discal pair of macrochaetae on second and third segments, sometimes an extra bristle or two with them; second segment with a median marginal pair and about two marginal at extreme sides; third segment with marginal row, anal segment sparsely set with macrochaetae except narrow

front border. Ventral plates with bristles and bristly hairs. Faint wrinkle or very short stump at origin of apical crossvein, apical cell widely open. Claws of male but little longer than those of female, not longer than last tarsal joint or hardly as long. Two strong proclinate orbital bristles in female, none in male.

Reproductive habit, probably larviposition of colored maggots.

Type, *Eurythiopsis ochracea*, new species.

***Eurythiopsis ochracea*, new species.**

Length of body, 9 to 10 mm.; of wing, 8 to 9.5 mm. One female and two males, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, the female February 3 and the males February 15, 1910, on flowers of *Baccharis* sp.

Head silvery, parafrontals olive-golden, frontalia light brown, first two antennal joints reddish-yellow, third antennal joint and arista black but third joint tinged with reddish at base, especially in female. Palpi yellow with faint rust tinge, but lighter than basal antennal joints. Upper occiput olive-golden, cheeks with very faint golden tinge in female. Occipital pile pale brassy, cheek and parafacial pile black. Thorax and pleurae wholly olive-golden, the four vittae sublinear. Scutellum ocher-yellowish, faintly golden pollinose. Abdomen and legs ocher-reddish or reddish-ocher, sometimes ocher-yellowish on sides of first three segments in male; median depression of first segment broadly black, heavy median vitta on second segment black more or less widened posteriorly; more or less distinct traces of median black on other segments, being in form of II or U on third segment and V or Y on anal segment. Wings evenly lightly infusate, very faintly pale at extreme base. Front scale of tegulae smoky-blackish; hind scale smoky-yellowish or at least with yellowish tinge, lighter than front scale.

***Corpulentosoma*, new genus.**

General characters of *Paragymnomma* as given by Brauer and Von Bergenstamm, but third antennal joint of male greatly widened and subtriangular, arista subgeniculate, abdomen elongate-subglobose, male with one proclinate orbital bristle, third arisal joint only microscopically pubescent. Important characters ally it with both *Paragymnomma* and *Cuphocera*, from the latter of which it differs in the third antennal joint being much longer than second, the second joint not being strongly elongate, in the swollen abdomen and the dense subspinelike character of the

abdominal macrochaetae. Description is of the male only. Male front at vertex fully one and one-half times greatest eye-width. Cheeks of male a little less than eye-height. Epistoma only feebly prominent. Parafacials rather narrow, sparsely hairy. Proboscis when extended about one and one-fourth times head-height. Second antennal joint two and one-half to three times as long as first; third joint of male fully twice as long as second and rounded subtriangular, lower or posterior edge longer than upper or anterior, distal edge rounded-subtruncate; outer surface of third joint with the small foramen-like scar, about size of arisal insertion, located as near base of joint as arista and approximated to lower or posterior edge. Second arisal joint elongate, the arista geniculated in one specimen.

Two sternopleural, three postsutural, no postacrostichal bristles, only one preacrostichal on right side in both specimens and none on left side. Scutellum without any discal macrochaetae, with two lateral pairs and a weak apical strongly decussate pair. Thorax and head are of equal width and quite narrow, scutellum is small. Abdomen is much wider than thorax, about one and one-half times as long as wide, much swollen, abruptly narrowed in front and behind; second segment with many median discal macrochaetae in a bunch extending from front margin back, a complete hind marginal row with a second irregular row in front of these and further ones in front of latter on sides; third segment with nearly same disposition of macrochaetae but latter slightly stronger and less closely placed, and in place of the median bunch only one discal pair or so; anal segment bare on broad anterior margin equalling nearly one-half of length, rest quite thickly covered with macrochaetae. The macrochaetae approach the spinelike form, but are more slender and pointed, besides being slightly curved or reclinate. Venter with bristles or ordinary macrochaetae on median line, but none spinelike. Apical cell narrowly to quite widely open. Usually no stump or wrinkle in continuation of fourth vein, but a very short stump showing in one wing of one specimen. Apical crossvein faintly waved like that of *Copecrypta*, more distinctly so in one specimen than in the other. Claws of male not especially elongate, about as long as last tarsal joint.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Corpulentosoma cornutum*, new species.

(To be continued.)

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MARCH, 1914

No. 3

ON THE GENUS CRYPTOCHÆTUM

(*Diptera, Muscidae acalyptatæ*)

By FREDERICK KNAB

The anomalous genus *Cryptochætum* was first brought to the attention of American entomologists through the discovery that in Australia certain species were parasitic on scale insects and through their introduction into California to control the injurious scale insect *Icerya purchasi*. One of these forms was described by Williston under the name *Lestophonus iceryæ*, from material sent to the United States Department of Agriculture from Australia by Mr. Frazer S. Crawford (Insect Life, vol. 1, p. 21, 1888). Shortly afterwards a second species was described in Australia by Skuse under the name *L. monophlebi* (Proc. Linn. Soc. N. S. Wales, 2 ser., vol. 4, p. 125, 1889). The validity of this last species has been denied by Williston (Insect Life, vol. 1, p. 330), but reaffirmed by Riley (Proc. Ent. Soc. Wash., vol. 1, p. 263, 1890) and recently by Melander (Journ. N. Y. Ent. Soc., vol. 21, p. 248, 1913).

Recently specimens of *Cryptochætum* bred in Ceylon from scale insects of the genus *Walkeana* were submitted to the writer for determination and this has caused him to go over the literature and the material in the national collection. As it appears that there is still doubt in some minds that the two forms described from Australia are distinct, it seems worth while to record the result. I can point out additional characters for the two Australian species, and the Cingalese form proves to be distinct and is described herewith. Professor Melander, in his diagnosis of the genus (l. c., p. 246), states that a single pair of scutellar bristles is present, but careful examination of all three species shows that there is a series of short bristles medianly on the apical margin which are but weakly differentiated from

the surface vestiture. In the table which follows I am unable to include the European species, *C. grandicorne* Rondani, as I have seen no specimens and the description is insufficient. As pointed out by Rondani, the antennæ are considerably broader in the male than in the female, and this appears to be particularly noticeable in *iceryæ*, although even here the difference is not as great as indicated for the European species by Rondani's figure.

TABLE OF SPECIES

- | | |
|--|----------------------------|
| 1. Wing elongate; bend of first vein rounded, second and third veins diverging very gradually, the submarginal cell narrow | <i>iceryæ</i> Will. |
| Wing broad; first vein more or less angulate, second and third veins strongly divergent, the submarginal cell broad | 2 |
| 2. Anterior cross-vein usually before end of first vein, posterior cross-vein distinctly arcuate, the convexity toward the second posterior cell; antennæ with the third joint rounded or with an obtuse point | <i>monophlebi</i> Skuse |
| Anterior cross-vein about in line with end of first vein, posterior cross-vein rectilinear; third antennal joint produced to a sharp point | <i>curtipenne</i> , n. sp. |

Cryptochætum iceryæ Williston.

I have not seen the type of this species and do not know if it is still in existence. I restrict the species in accordance with the figure given by Williston in connection with his original description, and with the restriction made by Skuse. It is at once recognizable by the more elongate wings, which finds tangible expression in the longer and narrower costal cell, in the approximation of the second and third veins, and in the more distal position of the anterior cross-vein. The posterior cross-vein is rectilinear. The *Cryptochætum* material sent from Australia is now represented in the national collection by a scant 13 specimens, mostly in very poor condition, from Professor Koebele. Of these I am able to refer six here with certainty. This species is said to be now common in southern California (Essig: Monthly Bull. Cal. State Comm. Hort., vol. 2, p. 250, 1913), but I have seen no Californian specimens that I can refer here and so am unable to say whether this species is established there. See remarks under the following species.

Cryptochætum monophlebi Skuse.

I have specimens before me from Australia and Tasmania which I believe are referable to this species. Three of them are from the Koebele material and three others from Perth, West Australia, collected by G. Compere; eight specimens in poor condition are from Tasmania, from

Arthur M. Lee. It is evident that the figure of the wing given by Wiliston in connection with his criticism of Skuse (Ins. Life, vol. 1, p. 329, fig. 72, 1890) belongs to this species, although the characteristic outward curvature of the posterior cross-vein is not very well shown. The angulation of the first vein and the wider submarginal cell should be particularly noted in comparison with the original figure of *iceryæ*. There is some variation in the wing venation of this and the foregoing species and the characters pointed out by Skuse are not always tangible, although the broader wing and the short and broad costal cell are obvious. The curvature of the posterior cross-vein, however, seems to be a good diagnostic for this species and coordinates satisfactorily with the other characters. The third antennal joint has a very weak angulation, hardly perceptible in some specimens.

This species is established in California and is an efficient parasite of *Icerya purchasi*. I have before me 20 specimens kindly furnished by Mr. P. H. Timberlake and bred by him from that host at Whittier, California, in 1911. All of these specimens are unmistakably *C. monophlebi*. Skuse was evidently mistaken in supposing that this species is parasitic only on *Drosicha crawfordi*.

Cryptochætum curtipenne, new species.

Color dorsally dark metallic blue; antennæ blackish; legs black, the tarsi lighter colored; wings very broad, grayish.

Frons broad, shining, dark blue, with numerous short but coarse hairs inserted in small punctures. Eyes minutely hairy, the hairs black. Antennæ with the third joint very large and broad, but falling considerably short of the lower eye-margin, blackish brown, densely pubescent, the apex drawn out into an acute point in front. Thorax, scutellum, and abdomen shining, metallic blue, uniformly covered with black hairs inserted in small punctures, giving the surface a reticulate appearance. Scutellum large and much produced, roundedly triangular, with a series of small marginal bristles, but weakly differentiated from the surface hairs, on the median portion of the posterior margin. Legs black, the tarsi obscurely yellowish and with longitudinal series of short black bristles. Wings short and broad; first vein distinctly angulate; second and third veins nearly rectilinear and moderately divergent; anterior cross-vein about in line with apex of first vein; posterior cross-vein rectilinear; last section of the fourth vein weak and pale.

Length: Body about 1.8 mm., wing 1.5 mm.

Paradeniya, Ceylon, two specimens, April and May, 1913, bred from *Walkeriana* ? *kandyense* Green by A. Rutherford.

Type, Cat. No. 18249, U. S. Nat. Mus.

Nearest to *C. monophlebi*, but slightly larger. It differs from this particularly in the straight posterior cross-vein and in the sharp point of the third antennal joint.

THREE NEW HYMENOPTERA

(Chalcidoidea)

By J. C. CRAWFORD

***Pachyneuron hammari*, new species.**

Female: Length about 2 mm. Head greenish, thorax bronzy, propodeum bluish, abdomen dark brown; head and thorax reticulate, the reticulations almost thimble-like; antennæ with two ring joints, the scape testaceous, rest of antennæ brown; pedicel longer than first joint of funicle, the joints of the funicle about subquadrate; apical part of scutellum set off by a transverse furrow; propodeum with a strong median carina reaching the smooth elevated neck; lateral folds rather indistinct, the area between them and the spiracular sulci with the sculpture less distinct than that on median area of propodeum where it is almost thimble-like; legs testaceous, the femora brown except apically.

Male: Length about 1.5 mm. Similar to the female except in secondary sexual characters.

Type locality: Roswell, New Mexico.

Described from 12 specimens received from the Bureau of Entomology, U. S. Department of Agriculture, under Quaintance No. 6111, with the additional data, "Bred from codling moth material, 5, 15, 13, A. G. Hammar, collector."

Type, Cat. No. 18167, U. S. Nat. Mus.

The species is distinguished from its allies by the strong medial carina on the propodeum.

***Cyrtogaster glasgowi*, new species.**

Female: Length about 2 mm. Dark green, with the abdomen considerably darker than head and thorax; head and thorax finely reticulated

medially, the sculpture on the face forming vertical lines; antennæ dark brown, the scape somewhat greenish with its base testaceous; joints of the funicle subquadrate, the pedicel longer than the ring-joints and first joint of funicle combined, parapsidal furrows complete, wide, with occasional transverse rugæ so that they somewhat resemble a row of pits, the sculpture of lateral lobes of mesoscutum and of axillæ somewhat finer than on middle lobe; scutellum before apex with a broad distinct transverse furrow, sculpture apicad of this furrow coarser and basad of it; propodeum coarsely, irregularly rugose, petiole shorter than hind coxæ from above showing five longitudinal carinæ, the outer pair seen from above at the extreme sides of petiole, the one on each side of the middle carina converging toward base; mesopleuræ, except upper part with a medial triangular area extending downward, with thimble-like punctures; wings hyaline, the postmarginal vein about half as long as the marginal, stigmal about as long as postmarginal; coxæ green, rest of legs reddish honey color, the femora near apices somewhat brown, tibiæ near base with indistinct light brownish annulus and near apices with another more indistinct brownish spot; abdomen smooth polished, the first segment occupying half the length of abdomen, the apex deeply, broadly emarginate.

Male: Length about 1.75 mm. Similar to the female but the scape entirely testaceous, the antennæ filiform, the enlarged joint of the palpi very conspicuous, dark green, legs lighter colored than the female, the brownish patches hardly visible, petiole not longer than in female.

Habitat: Vicinity of Urbana, Illinois.

Described from two females (one mounted on a slide) and one male reared from puparia of *Brachydeutera argentata* by Mr. H. Glasgow.

Type specimen, Cat. No. 18246, U. S. Nat. Mus.

Pleurotropis testaceipes, new species.

Female: Length 1.25 mm. Brilliant coppery, the vertex blue with some greenish reflections; mesothoracic foveæ green; apex of scutellum, metanotum, and propodeum greenish; abdomen bluish; face below and above V-shaped furrow reticulated; vertex faintly reticulate, the reticulations extending to the eyes; funicle 2-jointed, the first joint about as long as the pedicel; club 3-jointed, longer than the two joints of the funicle united; foveæ of mesonotum very faintly reticulate, the rest of the mesonotum and scutellum stronger reticulated, the reticulations of the scu-

tellum longitudinally elongate; medial carinæ of propodeum distinct, lateral carinæ very delicate; wings hyaline; coxæ æneous, the rest of the legs testaceous with the femora basally very slightly brownish; abdomen smooth.

Type locality: Batesburg, South Carolina.

Described from one specimen received from the Bureau of Entomology, U. S. Department of Agriculture, under Hunter No. 3415 (sublot) E. V. 81, issued July 11, 1913, from a leaf-miner on undetermined plant.

This species is easily distinguished from the other described North American species by the testaceous legs.

Type specimen, Cat. No. 18216, U. S. Nat. Mus.

TWO PORTO RICAN THYSANOPTERA FROM SUGAR CANE

By J. DOUGLAS HOOD

The two species of thrips recorded below as occurring on sugar cane in Porto Rico are both additions to the list of insects known to affect that plant, as well as to the known Thysanopterous fauna of the island itself. One is new to science and a rather anomalous member of the genus in which it is here placed; the other is a Holarctic greenhouse pest which has never before been reported from an outdoor habitat.

The only other papers on Porto Rican Thysanoptera were published by the writer in Volume I of this journal, pages 65-70 and 149-154.

Heliothrips femoralis Reuter.

- 1891. *Heliothrips femoralis* Reuter, Medd. Soc. Faun. et Fl. Fenn., Vol. XVII, p. 166.
- 1895. *Heliothrips cestri* Pergande, Ins. Life, Vol. VII, p. 391.
- 1895. *Heliothrips femoralis* Uzel, Monogr. d. Ordn. Thys., pp. 170, 458.
- 1896. *Heliothrips femoralis* Bergroth, Ann. Soc. Ent. Belg., Vol. XL, p. 67.
- 1899. *Heliothrips femoralis* Reuter, Acta Soc. Faun. et Fl. Fenn., Vol. XVII, No. 2, p. 39.
- 1902. *Heliothrips femoralis* Hinds, Proc. U. S. Nat. Mus., Vol. XXVI, p. 172, Pl. V, figs. 55, 56, Pl. VI, fig. 57.
- 1907. *Heliothrips femoralis* Buffa, Atti d. Soc. Tosc. d. Sci. Nat., Mem., Vol. XXIII, p. 63.
- 1908. *Heliothrips femoralis* Bagnall, Ent. Mo. Mag., 2d ser., Vol. XIX, pp. 6, 7 (footnote).

1908. *Heliothrips femoralis* Buffa, Redia, Vol. V, p. 135.

1909. *Heliothrips femoralis* Bagnall, Journ. Econ. Biol., Vol. IV, p. 39.

This is an abundant and destructive pest in the greenhouses of Finland, Sweden, Belgium, England, Italy, and the United States. Its native home has been open to conjecture, though its occurrence in greenhouses and the known distribution of the other species of the genus have suggested a Neotropical origin. Mr. Thomas H. Jones took one female from sugar cane at Rio Piedras, Porto Rico, January 20, 1914. Further collections and observations are necessary, however, before the species may safely be considered indigenous to the West Indies.

The following records add four States to its known distribution in North America: Ithaca, New York, April 15, 1912, J. C. Faure; Vienna, Virginia, September 16, 1913, R. A. Cushman; Urbana, Illinois, March 9, November 2, and November 20, C. A. Hart, R. D. Glasgow, J. J. Davis, and J. D. Hood; Champaign, Illinois, January, 1914, Alvah Petersen; Lincoln, Nebraska, February 13, March 10, and June 29, Lawrence Bruner. The specimens recorded above were all taken in greenhouses.

Haplothrips (?) tibialis, new species (fig. 1).

Female: Length about 1.2 mm. Color dark blackish brown, with a reddish cast due to amaranth purple¹ hypodermal pigmentation; all tibiae and tarsi, and apices of fore femora, pale yellow; segment 3 of antenna yellow, segments 4-6 with basal two-thirds, half, and third, respectively, nearly white.

Head about 1.2 times as long as wide; cheeks parallel; vertex slightly produced, the anterior ocellus overhanging; dorsal and lateral surfaces almost free from sculpture, set with a few inconspicuous bristles; postocular bristles capitate, about 0.75 as long as eyes. Eyes one-third as long as head in dorsal aspect, not protruding, rounded; on ventral surface of head produced posteriorly in an acute angle, and 1.4 times their dorsal length. Posterior ocelli opposite a line drawn behind anterior third of eyes. Antennae about 1.7 times as long as head, noticeably slender; exposed portion of segment 1 two-thirds as long as 2 and three-fourths as long as wide; segment 2 about 1.6 times as long as wide; 3 subconical, nearly twice as long as wide, slightly shorter than 4; 4-6 successively shorter, nearly barrel-shaped, pedicellate; 7 oblong, briefly pedi-

¹Robert Ridgway. Color Standards and Color Nomenclature, Pl. XII, 1912.

cellate, 2.5 times as long as wide; 8 three times as long as wide and three-fourths as long as 7; sense cones moderately long and slender; formula: 3, 1-2; 4, 2-2; 5, 1-1⁺; 6, 1-1⁺; 7 with one on dorsum near apex. Color of antennæ: Segments 1 and 2 concolorous with

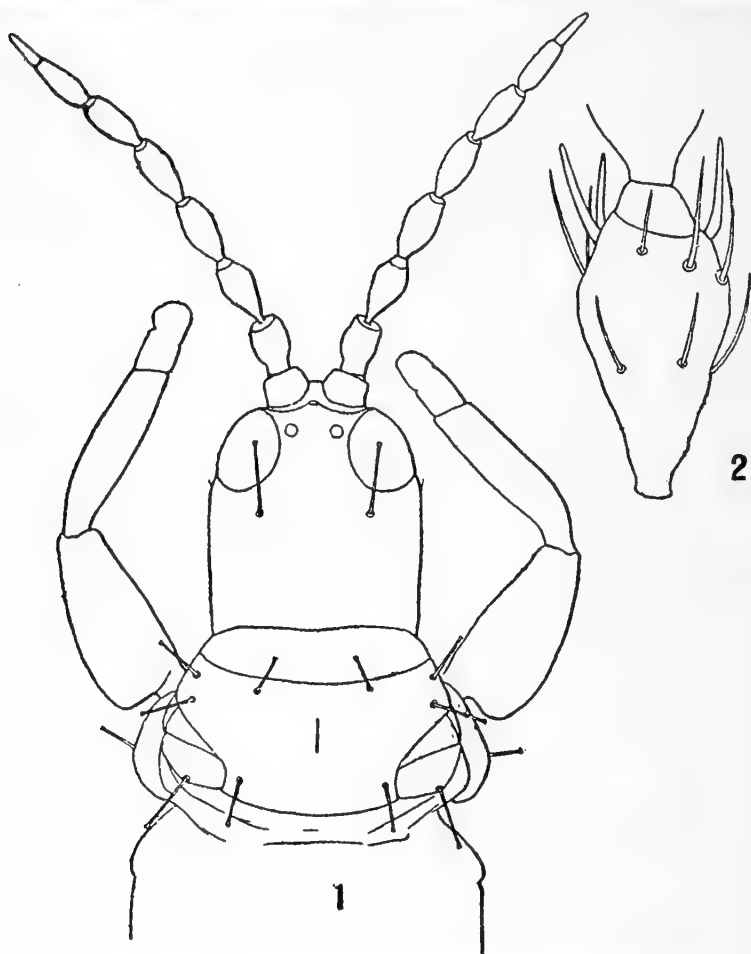


Fig. 1.—HAPLOTHRIPS (?) TIBIALIS Hood

1. Head and prothorax, female, greatly enlarged; holotype.
2. Segment 3 of left antenna, female, greatly enlarged; holotype.

head; 3 pale yellow, sometimes slightly grayish at sides of apex; 4-6 with basal two-thirds, half, and third, respectively, yellowish white; remainder of antenna neutral gray, the last two segments thus distinctly lighter than basal two. Mouth cone normal to genus.

Prothorax slightly more than half as long as head and (inclusive of coxæ) about 2.65 times as wide as long; surface smooth, with median thickening near middle; all bristles stout, capitate, and subequal in length, the posterior angulars longest and nearly equal in length to postoculars; coxal bristles shorter, capitate. Pterothorax not wider than prothorax; sides nearly straight, slightly converging posteriorly. Wings not narrowed at middle, sparsely fringed, lightly shaded with brown, and with faint median dark line; fore wings with three or four interlocated hairs on posterior margin. Fore tarsi unarmed.

Abdomen slightly wider than pterothorax. Tube two-thirds as long as head and about 2.2 times as long as basal width, which is slightly more than twice the apical. Abdominal bristles pointed, brownish; terminal bristles 0.8 as long as tube.

Measurements of holotype: Length 1.16 mm.; head, length 0.180 mm., width 0.151 mm.; prothorax, length 0.096 mm., width (inclusive of coxæ) 0.254 mm.; pterothorax, width 0.252 mm.; abdomen, width 0.264 mm.; tube, length 0.120 mm., width at base 0.056 mm., at apex 0.027 mm. Antennal segments: 1, length 27μ , width 33μ ; 2, length 41μ , width 26μ ; 3, length 47μ , width 25μ ; 4, length 49μ , width 25μ ; 5, 47μ ; 6, 45μ ; 7, 40μ ; 8, 30μ ; total length of antenna 0.33 mm.

Described from nine females taken at Rio Piedras, Porto Rico, January 20, 1914, by Mr. Thomas H. Jones, of the Porto Rico Sugar Producers' Experiment Station. Mr. Jones's notes say that the specimens were "collected from leaves of shorter, smaller, stalks of sugar cane. Characteristic thrips injury was noted on the leaves, especially where surfaces of the same leaf had been drawn close together by an Hesperid larva or from some other cause, thus forming a shelter."

The tibial coloration, the presence of two sense cones on the outer surface of the third antennal segment, the prolongation of the eyes on the ventral surface of the head, and the form of the wings, are indicative of a very distinct species. The last two characters are possibly of generic value, though several species ordinarily placed without question in the present genus have the wings only slightly more narrowed at middle. The facies of the insect is that of a true *Haplothrips*.

NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

Director of Entomological Stations, Lima, Peru

(Continued from page 32)

Corpulentosoma cornutum, new species.

Length of body, not including bristles, 9 mm.; of wing, 8 mm. Two males, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 3 and 15, 1910, on flowers of *Baccharis* sp.

Whole face and cheeks silvery-white pollinose, occiput cinereous except pale straw-colored lower area, parafrontals very dark greenish and thinly pollinose, frontalia light yellowish-brown, antennae and arista wholly black. Occipital pile gray; the sparse short hairs of cheeks, parafacials, and parafrontals black. Entire pleurae pale rust-yellow or pale yellowish-red, entire abdomen and legs deep yellowish-red. Thoracic scutum of the same very dark greenish as parafrontals, thinly silvery pollinose, four heavy vittae very faintly defined. Scutellum concolorous with thoracic scutum at base and sides, its disk and apex obscure pale reddish-yellow. Wings evenly deeply infuscate throughout, without any yellowish whatever at base; tegulae snow-white in both scales, also alulae of wing narrowly white.

Trichophoropsis, new genus.

Allied to *Trichophora*, *Vibrissomyia*, and *Andinomyia*, but has thickly-hairy eyes, long oral profile, rather short proboscis, long well-developed palpi, basal arisal joints both long and equal, front tarsi of female widened, no facio-orbital bristles, no dorsal macrochaetae on first two abdominal segments in female, hind crossvein close to apical crossvein, fourth vein continued in strong stump beyond apical crossvein. Described from both sexes.

Front of female at vertex about one and one-fifth times greatest eye-width, evenly widening into face, the latter at lower border of eyes being about twice greatest eye-width. Male front at vertex hardly three-fifths of greatest eye-width, evenly widening as in female into the wide face. Frontal bristles descending very low, to point one-half way between antennal and vibrissal insertions; strong bristles outside frontal row in male giving appearance of three frontal rows anteriorly; the outer bristles

of parafrontals in female present but weaker, with addition of two proclinate orbitals. Strong pair of divergent ocellar bristles. Third antennal joint of female normal, but little longer than second; that of male fully one and one-half times length of second and considerably to greatly widened, subtruncate apically. Palpi long, stout-filiform, with bristlets. Proboscis beyond geniculation a little less than head-height, horny. Oral profile long; head elongate, more so, as a rule, in male than in female, its lower border in male usually fully as great as its occipital height. Bristles of peristomalium and lower section of facialia vibrissiform, but only half as long as vibrissae. Cheeks nearly one-half eye-height in male, rather more than same in female. Male with median marginal pair of macrochaetae on second abdominal segment (one female has a single dorsal marginal on second segment). Three strong lateral pairs of scutellar bristles, weak decussate apical pair (absent in one female, which is type), two or three weak discal pairs, scutellar bristlets usually stronger in male than in female. Costal spine long, as a rule.

Reproductive habit, larviposition of colored maggots but probably not on foliage.

Type, *Trichophoropsis puna*, new species.

This genus is seen to be much allied to *Vibrissomyia*, though abundantly distinct on very many characters as can be seen by comparing the descriptions.

***Trichophoropsis puna*, new species.**

Length of body, 9 to 11 mm.; of wing, 7 to 8 mm. Four females and one male, Oroya, Peru, 12,250 feet, March 6, 1913, on short herbage.

Black; head silvery, parafacials and parafrontals more or less deeply brassy; facial plate amber-yellowish, brassy; occipital pile pale to deep brassy; frontalia, third antennal joint and arista dark brown; lunula and first two antennal joints yellowish-red, palpi yellowish-red to reddish-yellow. Thorax thinly silvery, dorsum with four broad nearly equal black vittae. Scutellum narrowly reddish-yellow on apex in female, very widely so in male. Abdomen of both sexes very distinctly silvery; male abdomen with red on sides of second segment, and conspicuous reddish-yellow to yellowish-red hypopygium. Legs wholly black. Wings clear, hardly or only slightly tinged with tawny at base. Tegulae pure white. Third antennal joint of male only moderately widened. Cheek width same in both sexes.

Type, TD4125 (fly, dissection of uterus, etc., and maggots).

Cotypes include TD4121. This and type were dissected and the species found to have a subtubular uterus with eggs and colored maggots irregularly arranged. This indicates the *Pyrrhosiinae*. A form to be classed as *Andinomyia*, but transitional between that genus and *Vibrisomyia* (TD4117, TD4124), has been dissected and found to have a straplike uterus, thus indicating the *Hystriiidae* and the marked distinctness between these forms and the present genus.

Trichophoropsis nitens, new species.

Length of body, 10 mm.; of wing, 8 mm. Three males, Oroya, 12,250 feet, March 6 and 7, 1913, on short herbage.

Differs from *T. puna* in head being silvery-white, occipital pile silvery; thoracic dorsum less silvery, more shining, the thoracic vittae indistinct, the median pair narrower than the outer pair; abdomen wholly shining without pollen, hypopogium wholly black. Wings deeply and broadly yellowish basally, involving the veins; tegulae deep fuscous-yellow to more or less whitish. Sides of first to third abdominal segments reddish. The head is slightly longer, the facial profile proportionately shorter, third antennal joint greatly widened, cheek width less than half eye-height, eyes descending lower. One specimen has four sternopleural and four postsutural bristles.

Gabanimyia, new genus.

General characters of *Paragymnomma* and approaching in some respects both *Eusignosoma* and *Trichophora*. Description is of both sexes. Wings only faintly infusate, subhyaline; front tarsi of female not at all dilated; parafacials pilose, with one facio-orbital macrochaetae at lower front border of eye; epistoma only feebly produced; second arisal joint slightly to considerably elongate, about twice to fully three times as long as wide or slightly more; arista not pubescent, except microscopically so; abdomen much shorter than wings, not globose, but short, more or less flexed or incurvate, strongly arched, narrow subovate to wider shortened-ovate, with a globose-like convexity above, not densely setose, without spinelike macrochaetae. Female with two proclinate orbital bristles, frontal width at vertex about one and one-third eye-width, frontal bristles in single row. Male without outer proclinate orbital bristles but with frontal row double at least anteriorly, front at vertex about or a little more than eye-width. Cheeks fully one-half eye-height in both

sexes. Third antennal joint about or hardly twice as long as second. Proboscis about one and one-third times head-height, no palpal bristles.

Three sternopleural, three postsutural, three preacrostichal, and three postacrostichal bristles. Scutellum with two long lateral pairs of bristles, and a shorter slender strongly decussate apical pair; disk well set with long bristly pile or strong bristly hairs like setae. Abdomen thickly set with rather long strong bristly pile, especially on base and sides, less thickly showing on dorsum of anal segment, thickly developed on venter, sometimes developed into quite long true bristles on base and sides of tergum; second and third segments with sparse marginal row of macrochaetae and a separated median discal pair, or third with discal row extending across segment; anal segment sparsely set with bristles except on front border. Fossa-like scar of third antennal joint twice as far removed from base of joint as arisal insertion. Claws of female short, those of male longer. Third vein bristled one-half way or more to small crossvein. Wrinkle or short stump at origin of apical crossvein.

Reproductive habit, larviposition of colored maggots.

Type, *Gabanimyia polita*, new species.

Gabanimyia polita, new species.

Length of body, 7 to 9 mm., according to degree of abdominal flexure; of wing, 8 to 9 mm. Two females and one male, Casahuari, San Gaban Canyon, about 4,500 feet, February 4, 1910, on flowers of *Mikania* sp.; and one male, east base of Huascaray ridge, about 7,000 feet, September 22, 1911, on foliage.

Wholly soft deep black; head silvery-white; occipital pile white or whitish, hairs of cheeks and parafacials black; frontalia and lunula light brown; parafrontals, pleurae, and front edge of thoracic scutum shining black with a thin silvery coat, giving way to a faint coat of tawny pollen on disk of thorax, scutellum, and abdomen which is only visible in oblique lights but most noticeable on anal segment. Four quite well marked thoracic vittae, subequal. Wings smoky at extreme base; both scales of tegulae deeply black-infusate. Antennae are brown to black with silvery bloom, first two joints more shining like parafrontals. Legs wholly black, the tibiae sometimes brownish. The second arisal joint is about two or at most three times as long as wide, there is only a wrinkle at origin of apical crossvein, the third abdominal segment is without a complete discal row of bristles, the abdomen is narrowed and shortened.

Type, female.

Gabanimyia hystricosa, new species.

Length of body, 9 mm.; of wing, 9.5 mm. One female, Rio Charrapa, valley of Rio Tabaconas in western Jaen, about 4,500 feet, September 15, 1911, on foliage.

Differs from *G. polita* as follows: Second arisal joint well elongated, nearly four times as long as wide; the first arisal joint very distinct and rather longer than wide. Third antennal joint of female rather less than twice the length of second joint. Fourth vein with stump at origin of apical crossvein. Third abdominal segment with discal row of macrochaetae extending across segment. Pile of abdomen and scutellum developed into long bristles, that of scutellum looking like very long erect setae or weak slender spines; that of abdomen especially strong on base and sides, giving the abdomen a much bristled appearance. Abdomen broad-oval. Ventral plates with strong bristles. The coloration is in all respects so similar to that of *G. polita* as to conform perfectly with the description of that species.

Eublepharipeza, new genus.

Facies of *Blepharipeza*, which it greatly resembles in the densely spinose abdomen and scutellum; and of *Gabanimyia*, which it surpasses in the small head and swollen abdomen. In Brauer and Von Bergenstamm's tables it runs to *Jurinia*, *Jurinella*, and *Pseudohystricia*. The head is relatively smaller and narrower than in any other muscoid form known to me; the hind tibiae are not ciliate; the epistoma is only very weakly salient; the anterior tarsi of female are more or less distinctly dilated; parafacials narrow, pilose; third antennal joint straight on front border, that of female sometimes appearing subconvex apically owing to a more rounded tip. Third antennal joint about twice as long as second in both sexes, second joint elongate; second arisal joint short. A pair of proclinate ocellar bristles. Female with two proclinate orbital bristles, male with none. Female front narrow, at vertex hardly two-thirds of eye-width; that of male at vertex little more than one-third eye-width. Eyes thickly but not densely pilose. Inner vertical bristles decussate. Palpi elongate and subcylindrical, slightly curved, swollen beyond middle; proboscis fleshy and stout, short, not equalling head-height. Cheeks of female about one-fourth of eye-height, those of male one-third of eye-height; furnished in both sexes with one to three bucco-orbital bristles running obliquely down to peristomalium.

Three sternopleural bristles, three postsutural, two to three postacrostichal, and three preacrostichal. Scutellum and abdomen densely set with spinelike macrochaetae over whole dorsal surface, four marginal pairs of ordinary macrochaetae on scutellum. Ventral plates with heavy spine-bunches. Abdomen broad, rounded, subglobose, short-oval. Bend of fourth vein very close to hind margin of wing, apical cell widely open a little before wingtip, last section of fourth vein deeply bent in. Claws of male not very long, those of female somewhat shorter.

Reproductive habit, larviposition of colored maggots, but probably not on foliage.

Type, *Eublepharipeza hystrix*, new species.

***Eublepharipeza hystrix*, new species.**

Length of body, 9.5 to 11 mm., not including spines; of wing, same measurement. One female and one male, Hacienda Charape, valley of Rio Tabaconas, montanya of western Jaen Province, northern Peru, about 4,000 feet, September 19, 1911, on foliage.

Wholly black, rather shining; scutellum with a reddish tinge; thorax silvery pollinose leaving five very indistinct narrow vittae; parafrontals black, silvery pollinose; frontalia brown to blackish, antennae brownish to blackish; palpi pale yellow. Occiput, cheeks, and face silvery; occipital pile whitish, rest of head hairs black. Tibiae faintly reddish. Wings clear, with faint infuscation at base which extends along costa. Both scales of tegulae deeply smoky, blackish, the front scale whitish on base.

Type, female.

***Eublepharipeza gabana*, new subspecies.**

Length of body, 9 mm.; of wing, 9.5 mm. One female, Casahuiri, San Gaban Canyon, about 4,500 feet, February 4, 1910, on flowers of *Mikania* sp.

Differs from *E. hystrix* in being rather smaller, with more constricted or narrowed thorax, only four vittae on mesoscutum, the basal infuscation of wing blacker and not extending along costa, the scutellum more nearly black like abdomen, palpi tipped with brown, front scale of tegulae with but faint trace of the whitish at base.

***Eublepharipeza nigra*, new subspecies.**

Length of body, 7 to 11 mm., not including spines; of wing, 7 to 11

mm.; width of abdomen, 4 to 7.5 mm. Twenty-nine specimens as follows: Matucana, 8,000 feet, eight males and five females on foliage, January 29 to 30, 1913; five males and six females on foliage, August 1, 1913; two males on foliage, August 16, 1913. Verrugas Canyon, about 5,400 feet, two males, June 25, 1913, on flowers of *Buddleia occidentalis*; one female, July 24, on same flowers.

Differs from *E. hystrix* as follows: Scutellum same black as abdomen. Only four vittae on mesoscutum, the single one interposed between the median pair in *hystrix* not clearly defined. First and second antennal joints usually obscure reddish, but sometimes quite as deeply colored as third joint. Palpi tipped with brownish in all specimens. Legs wholly black. Both scales of tegulae deep smoky-black. Differs from *E. gabana* in blackish costa of wing, black legs, second antennal joint usually reddish, and general blacker coloration.

Type, female, Matucana, January 30, TD4110 (fly, dissection of subtubular uterus, and black maggots). The genus is unmistakably Pyrrhosine.

Cotype, same locality, January 29, TD4109 (fly, dissection of uterus, maggots).

These three forms practically duplicate the habitus and coloration of *Euhysticia nigra*, having practically the same hyaline wings, and strongly approximate those of *Fabriciopsis hystrix*, *Gabanimyia hystricosa*, and *G. polita*.

Neojurinia, new genus.

Runs to *Jurinia* in Brauer and Von Bergenstamm's tables. Differs in the epistoma being less strongly salient, the abdominal spines slightly curved and covering whole surface, and the uterus subtubular instead of straplike. The eyes are thickly hairy, palpi clavate, laterally compressed; proboscis but little longer than head-height, third antennal joint about equal to second, no ocellar bristles, both basal arisal joints elongate, front tarsi of female moderately widened.

(To be continued.)

Date of publication, March 30, 1914.



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TWO NEW THYSANOPTERA FROM PANAMA

By J. DOUGLAS HOOD

The two species described below were collected by Mr. James Zetek, of the Isthmian Canal Commission, from a single plant of *Hura crepitans* L., on Taboga Island, in the Bay of Panama. The leaves of this plant bore numerous galls, about which the thrips were especially abundant and active. Whether they are actually responsible for these galls, or only visitors which find better food or protection in their vicinity, can not at present be answered, though it is interesting in this connection to note that their closest relatives are the Javanese leaf-folding species of the genus *Gynaiķothrips*.

Holopothrips, new genus.

(ὅλος, entire; ὤψ, eye; θρίψ, a wood worm)

Head longer than broad and longer than prothorax; cheeks smooth. Eyes large, protruding, reniform in dorsal aspect, nearly contiguous below anterior ocellus and behind posterior ocelli. Ocelli closely approximate and anterior in position, the anterior ocellus directed upward and forward. Antennæ 8-segmented, slender, much longer than the head; fifth antennal segment as long as or slightly shorter than the fourth, and longer than the sixth. Mouth cone rounded at apex, labrum sharply pointed and slightly produced beyond labium. Prothorax half as long as head; chitinous plate at posterior angles fused with notum. Fore tarsi unarmed. Wings not narrowed at middle. Tube much shorter than head.

Type: *Holopothrips signatus* Hood.

The holoptic eyes, short tube, and the fusion with the notum of the chitinous plate at the posterior angles of the prothorax, appear to be characters of generic importance, which should serve to distinguish the two new species described below from the genus *Gynaiķothrips* Zimmermann.

The two known species may readily be separated by means of the following

KEY TO THE SPECIES OF HOLOPOTHRIPS

- A. Head 1.2 times as long as wide; eyes much longer than their distance from posterior margin of head; antennæ twice as long as width of head. Prothorax with anterior angular bristle about as long as postoculars. Antennal segments 3-6, fore tibiæ, all tarsi, abdominal segments 1-3 (rarely only 1 and 2), and usually the hind coxæ and femora, nearly clear white. *Holopothrips signatus* Hood
- AA. Head 1.6 times as long as wide; eyes much shorter than their distance from posterior margin of head; antennæ 2.7 times as long as width of head. Prothorax with anterior angular bristle minute and barely visible. Color of entire insect nearly uniform dark blackish brown. *Holopothrips tenuis* Hood

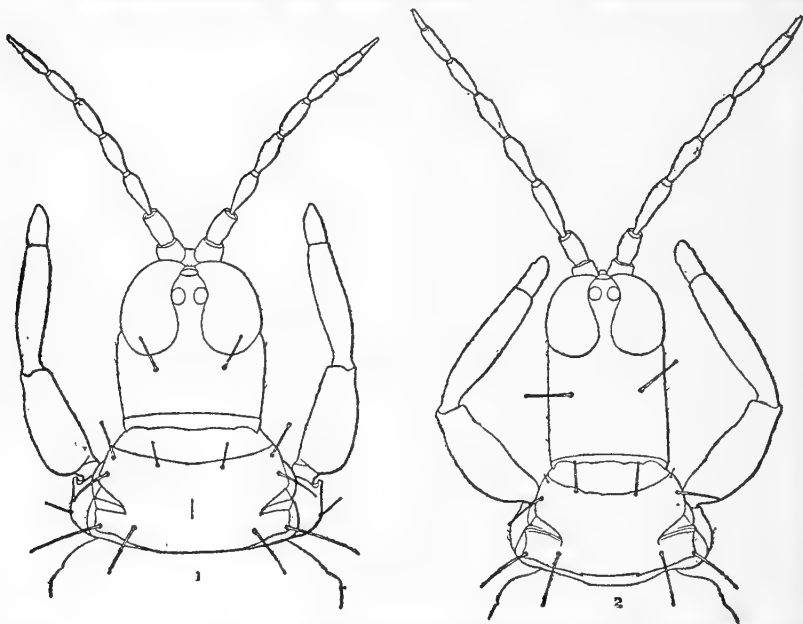


Fig. 1.—*Holopothrips signatus*, new genus and species, head and prothorax of female, greatly enlarged; holotype.

Fig. 2.—*Holopothrips tenuis*, new species, head and prothorax of female, greatly enlarged; holotype.

Holopothrips signatus, new species (fig. 1).

Female: Length about 1.7 mm. Color blackish brown, with coral red hypodermal pigmentation in head, thorax, and abdominal segments 4-9; antennal segments 3-6, fore tibiæ, all tarsi, abdominal segments 1-3 (rarely only 1 and 2) and usually the hind coxæ and femora, nearly white.

Head about 1.2 times as long as wide, broadest just behind eyes; cheeks rounded to eyes and converged gently to a slight collar-like widening at base; dorsal and lateral surfaces with close, transverse striæ and a few minute bristles; postocular bristles capitate, slightly less than half as long as eyes. Eyes large, prominent, reniform, half as long as head, almost enclosing the ocelli, nearly contiguous below anterior ocellus, produced inward behind the posterior ocelli to near the median line, the interval at this point only slightly more than one-third the greatest width of eye. Ocelli closely approximate and anterior in position. Antennæ slender, about 1.7 times as long as head and twice its width; segment 1 slightly wider than long; 2 subcylindrical, about twice as long as wide; 3 and 4 claviform, pedicellate, the former about two and one-half times as long as greatest width and with a very narrow pedicel; 5-7 subfusiform, truncate at either end; 8 about 0.8 as long as 7, slender, narrowed at base; sense cones and spines slender, nearly transparent. Color of antennæ: Segments 1 and 2 nearly concolorous with head; 3 pale grayish yellow, slightly darker near base and along outer surface; 4-6 nearly uniform pale grayish yellow, 6 shaded with gray apically; 7 and 8 light olive gray, the former yellowish at base. Mouth cone less than half as long as dorsum of head and somewhat wider than long.

Prothorax about half as long as head and (inclusive of coxæ) distinctly more than twice as wide as long; pronotum with short median thickening; all usual bristles present, capitate, the pair at the posterior angles longest; coxal bristle capitate, about as long as anterior marginal pair. Pterothorax slightly wider than prothorax. Wings dark brown at extreme base and lightly shaded with brown toward apex, the intermediate portion white; fore wings with about eight interlocated hairs on posterior margin. Legs slender; fore tibiæ, all tarsi, and usually the hind coxæ and femora, nearly clear white; fore tarsi unarmed.

Abdomen slender, only slightly wider than pterothorax. Segments 1-3 (rarely only 1 and 2) white, with a light wash of yellow, the third segment with a gray blotch in median third, just behind the transverse carina near base. Tube about 0.7 as long as head and about twice as wide at base as at apex. Abdominal bristles yellow or brown in color, terminal bristles darkest, distinctly shorter than tube.

Measurements of holotype: Length 1.67 mm.; head, length 0.252 mm., width 0.212 mm.; prothorax, length 0.124 mm., width, inclusive of coxæ, 0.348 mm.; pterothorax, width 0.372 mm.; abdomen, width

0.396 mm.; tube, length 0.174 mm., width at base 0.079 mm., at apex 0.041 mm. Antennal segments: 1, 36μ ; 2, length 51μ , width 28μ ; 3, length 69μ , width 27μ ; 4, length 63μ , width 26μ ; 5, length 63μ , width 25μ ; 6, 51μ ; 7, 45μ ; 8, 35μ ; total length 0.41 mm.

Male: Very close in color and structure to the female, from which it differs principally in the more slender head; fore tarsi absolutely unarmed.

Described from 21 females and 24 males, taken by Mr. James Zetek from the under surface of leaves of *Hura crepitans* L., on Taboga Island, Panama, October 18, 1913. According to Mr. Zetek they were very common in the vicinity of certain leaf galls, and he suggests that the thrips may have been concerned in their formation.

One female and nine males differ from the other specimens of the species in having the hind coxæ and femora dark brown instead of white. Structurally the two forms appear identical and at present seem not to deserve special names.

Holopothrips tenuis, new species (fig. 2).

Female: Length about 2.2 mm. Color nearly uniform dark blackish brown, with coral red hypodermal pigmentation in head, prothorax, and abdomen; antennæ, tarsi, thorax, and apical half of tube slightly paler.

Head about 1.6 times as long as wide, broadest across eyes; cheeks almost parallel; dorsal and lateral surfaces with close transverse striæ and a few minute bristles; postocular bristles capitate, three-fourths as long as eyes. Eyes large, prominent, reniform, less than half as long as head, almost enclosing the ocelli, nearly contiguous below anterior ocellus, produced inward behind the posterior ocelli to near the median line, the interval at this point about one-fourth the greatest width of eye. Ocelli closely approximate and anterior in position. Antennæ slender, about 1.7 times as long as head and 2.7 times its width; segment 1 about as wide as long; 2 subcylindrical, about twice as long as wide; 3-5 claviform, pedicellate, the former about 3.4 times as long as greatest width and with a very narrow pedicel; 6 and 7 subfusiform, truncate at either end; 8 nearly 0.6 as long as 7, slender, narrowed at base; sense cones and spines slender, nearly transparent. Color of antennæ: Segments 1 and 2 nearly concolorous with head, 2 paler along middle; 3-8 brownish drab to almost yellow, the bases of 3-5 and all of 7 and 8 darker. Mouth cone about two-fifths as long as dorsum of head and about as wide as long.

Prothorax about half as long as head and (inclusive of coxæ) slightly more than twice as wide as long; all usual bristles present, the anterior angulars minute and pointed, other bristles long, capitate, the two pairs at the posterior angles slightly the longest; coxal bristle minute. Pterothorax distinctly wider than prothorax. Wings very lightly suffused with brown, and with a brown blotch at base; fore wings usually with from 10 to 12 interlocated hairs on posterior margin. Legs slender, nearly concolorous with body, tarsi slightly paler; fore tarsi unarmed.

Abdomen slender, only slightly wider than pterothorax. Tube about 0.7 as long as head and slightly less than twice as wide at base as at apex. Abdominal bristles yellow or brown in color, terminal bristles darkest, nearly as long as tube.

Measurements of holotype: Length 2.17 mm.; head, length 0.348 mm., width 0.216 mm.; prothorax, length 0.168 mm., width, inclusive of coxæ, 0.365 mm.; pterothorax, width 0.444 mm.; abdomen, width 0.468 mm.; tube, length 0.240 mm., width at base 0.090 mm., at apex 0.048 mm. Antennal segments: 1, 42μ ; 2, length 63μ , width 33μ ; 3, length 113μ , width 33μ ; 4, length 90μ , width 33μ ; 5, length 93μ , width 31μ ; 6, 75μ ; 7, 73μ ; 8, 42μ ; total length of antenna 0.59 mm.

Male: Length about 1.6 mm. More slender than female; fore tarsi absolutely unarmed.

Described from 26 females and 10 males, taken with the preceding species from the under surface of leaves of a plant of *Hura crepitans* L., on Taboga Island, Panama, October 18, 1913, by Mr. James Zetek. The species is thought by its collector to be partly responsible for the galls which were common on the leaves of its food plant.

SEVEN NEW SPECIES OF ETHMIA FROM TROPICAL AMERICA

(*Lepidoptera*, *Ethmiidæ*)

By AUGUST BUSCK

Ethmia transversella, new species.

Labial palpi white; second joint with three black annulations, the two lower of which are connected exteriorly; terminal joint with two black annulations. Face dirty white. Head dirty white with a large, dark brown central blotch. Thorax dirty white with two central, two lateral,

and two posterior, small, dark brown spots. Forewing dirty white unevenly suffused with dark brown; an ill-defined, dark brown streak from base through basal half of the cell; an ill-defined, outwardly oblique, brown streak from just before the middle of costa crosses the cell and then turns in an abrupt angle outwardly toward apex, ending beyond the cell, at apical third in a sharply outwardly angulated, ill-defined, transverse, brown fascia; around apical and terminal edge is a series of ten small, sharply defined, blackish dots; cilia white. Hindwing light yellowish white, hyaline, with darker fuscous tips; cilia white. Abdomen dark brown with whitish fuscous underside and ochreous anal tuft. Legs dirty white with broad, blackish brown annulations.

Alar expanse, 30 mm.

Habitat, Juan Vinas, Costa Rica; W. Schaus, collector.

Type, Cat. No. 18270, U. S. Nat. Mus.

Nearest to *Ethmia baliostoma* Walsingham, but not so broad winged as this species and differing in the transverse, outwardly angulated fascia.

***Ethmia gigantea*, new species.**

Labial palpi slender, smooth, bluish black, second joint with a broad, subapical white ring; terminal joint with two annulations and extreme tip white. Face and head white. Collar black. Thorax white, with front, base of patagia, a large central spot and three posterior dots bluish black. Forewing blackish brown sprinkled with white and with dorsal and apical part white; this white part sends a broad spur up into the black part at basal third and below this spur is a round black dot; at apical third is another longer, zigzag spur outwardly oblique into the dark part of the wing and beyond this white spur the dark color runs down nearly to dorsal edge; a series of black marginal spots around apex to tornus. Cilia white with a black patch below apex. Hindwings semitransparent, light whitish fuscous, darker toward apex; cilia white. Abdomen dark fuscous above, light fuscous on the underside and with the last joint orange. Legs blackish barred with white.

Alar expanse, 35-40 mm.

Habitat, Zacualpan, Mexico, August; R. Müller, collector.

Type, Cat. No. 18265, U. S. Nat. Mus.

Nearest to *Ethmia coronata* Walsingham and *Ethmia abdominella* Busck, but larger than either, and differing from both of these in the coloration of the abdomen as well as in the details of the wing pattern.

Ethmia linda, new species.

Labial palpi white, second joint smoky toward base and with a narrow black annulation at apex; terminal joint with a broad black annulation immediately below the apex. Face white. Head white laterally, with a large central, deep black crown. Antennæ dark fuscous with basal joint white. Thorax white with two lateral deep black spots and with a posterior, black, transverse band; extreme posterior tip white. Forewings white tinged with smoky fuscous, especially on costal half, except around the deep black spots which constitute the wing markings; extreme base of the wing and a small costal spot near base black; besides these black spots and the black marginal markings there are nine round black dots of nearly equal size on the wing; five on basal half of the wing and four on apical third of the wing, all within the margins, and all surrounded by pure white scales; around apical and terminal edges is a series of nearly contiguous black dashes, beyond which the edges of the wings are pure white; cilia smoky white. Hindwing dark bronze fuscous with whitish cilia. Abdomen dark brown. Legs whitish fuscous; anterior tarsi annulated with black.

Alar expanse, 16–17 mm.

Habitat, Caracas, Venezuela.

Type, Cat. No. 18267, U. S. Nat. Mus.

Intermediate between *Ethmia paucella* Walker, from Santo Domingo, and *Ethmia mulleri* Busck, from Mexico, but considerably smaller than either and easily differentiated by the different pattern of the forewing and by the dark colored hindwing.

Ethmia mansita, new species.

Labial palpi white, slightly sprinkled with black. Face and head white. Thorax white with front and a large posterior spot black. Forewings white shaded with light brown, especially on dorsal and costal basal half; a central, longitudinal row of five black dashes from base to apex, below which are two black dots in the cell and some black scales at the end of the cell; extreme costal edge, black at base of the wing; a marginal series of black dashes around apical and terminal edges. Cilia white shaded with light brown at the tip. Hindwing rather dark fuscous with white cilia. Abdomen blackish fuscous with white underside. Legs light gray, tarsal joint blackish.

Alar expanse, 18 mm.

Habitat, Tehuacan, Mexico, September; R. Müller, collector.

Type, Cat. No. 18266, U. S. Nat. Mus.

Nearest to *Ethmia mulleri* Busck, but without the dark costal area and with different arrangement of the spots.

Ethmia clarissa, new species.

Labial palpi white, shaded longitudinally with black, terminal joint with apex black. Face and head white. Antennæ blackish with a superior line of white dots; basal joint white with a large black dot. Thorax white with a black dot on the base of patagia. Forewing shining white with bluish black markings; extreme base of costa black, four black spots nearly forming a square on basal third within the margins; a downwardly curved, black, costal streak at basal third, below the end of which a small, oblique, black spot, edged exteriorly with saffron yellow; obliquely below and before this a small black spot on the dorsal edge, a larger, inwardly directed, triangular, black dorsal spot at apical third; two small black spots just below costal edge on outer half; from the latter of these an interrupted, crooked series of black spots across the tip of the wing to a large black spot just above tornus; three small black spots in a triangle on the outer third of the wing, one of which is on the end of the cell; a broken, marginal, black line around apex; just before which is a small, easily overlooked, yellow dash at apex; cilia white, with two broad, dark brown dashes, one at apex and one outside the black terminal spot. Hindwing whitish, iridescent, semitransparent, on basal half, dusky brown toward apex; cilia white with brown basal line. Abdomen dark brown above, underside and anal tuft white. Legs white with broad, dark brown annulations on the tarsi.

Alar expanse, 17 mm.

Habitat, Cuba; W. Schaus, collector.

Type, Cat. No. 18269, U. S. Nat. Mus.

Allied to *Ethmia notatella* Walker, *E. xanthorrhoea* Zeller, and *E. hiramella* Busck, but much smaller than any of these and distinguished from them by the two golden ochreous dashes on the forewings.

Ethmia hiramella, new species.

Labial palpi white, each joint with a broad, median, bluish black annulation. Face and head white. Antennæ dark brown with white basal joint on upper side of which is a large black spot. Thorax white with

a black, anterior, transverse band under the white patagia and with two posterior black spots. Forewing white with 17 bluish black spots and dashes besides a series of black spots around apex; extreme base of the wing black; the black spots are all within the margin and are all separate; most of them are rounded, but one within apical third of costa and another just above the middle of the cell are angulated; two within the dorsal margin and one at the end of the cell are rather larger than the rest. Around apical and terminal edge is a line of equidistant, smaller, black dots; cilia white with a single conspicuous black tuft at apex. Hindwing white, shiny, nearly transparent on dorsal basal part with ochreous fuscous apical third and with white cilia. Abdomen ochreous fuscous above, underside whitish; anal tuft ochreous. Legs white with black tarsal annulations.

Alar expanse, 24–26 mm.

Habitat, Santiago, Cuba; Wm. Schaus, collector.

Type, Cat. No. 18272, U. S. Nat. Mus.

Nearest and similar to the somewhat larger *Ethmia xanthorrhoea* Zeller, from Porto Rico, but without the zigzag lines on the forewing and with lighter apical part of the hindwing.

***Ethmia submissa*, new species.**

Labial palpi white, second joint suffused with light fuscous exteriorly. Face strongly suffused with fuscous exteriorly. Head pure white. Antennæ dark brown. Thorax with a large, central, brownish fuscous patch; edges of collar and patagia white. Forewings shiny satiny white, clouded on basal and costal half with light gray. On the middle of dorsum is a large, semicircular, dark brown spot irrorated with bluish white scales; tip of the wing coppery brown with an ill-defined, white, zigzag line; apical and terminal cilia dark fuscous with dark brown base; dorsal cilia white. Hindwing white with light fuscous edges and white cilia. Abdomen dark fuscous above, whitish on the underside. Legs white with dusky fuscous tarsi.

Alar expanse, 17–18 mm.

Habitat, Cuba; E. A. Schwarz and W. Schaus, collectors.

Type, Cat. No. 18271, U. S. Nat. Mus.

Intermediate in size and coloration between *Ethmia unguatella* Busck and *Ethmia elutella* Busck, from Panama, and differing from both by its light hindwings.

NEW MOSQUITOES FROM PERU

(Diptera, Culicidæ)

By HARRISON G. DYAR and FREDERICK KNAB

Very little is known of the mosquito fauna of Peru, although great diversity of conditions in an equatorial country promises great richness. The only species heretofore known to us from Peru have been the following, received for determination at different times: *Culex quinquefasciatus* Say, Ancon, 3 Feb. 1914 (C. H. T. Townsend); *Aedes leucomelas* Lutz, Rio Charape, 18 Sept. 1911 (Townsend); *Aedes calopus* Meigen, Ancon, 3 Feb. 1914 (Townsend); *Anopheles punctipennis* Theob., San Bartolome, 5,800 feet, 16 Apr. 1913 (Townsend); *Anopheles boliviensis* Theob., Rio Charape, 13 Sept. 1911, Rio Huascaray, 22 Sept. 1911 (Townsend). To these we can now add the following new forms.

Phalangomyia, new genus.

Proboscis long, uniform, nearly straight in both sexes, in the male with a false joint near the middle. Palpi short in the female; in the male long and slender, acuminate. Antennæ filiform in the female, the joints with basal whorls of short sparse hairs; in the male sparsely plumose, rather long. Clypeus well developed, nude.

Prothoracic lobes small, lateral. Mesonotum elongate, convex, with longitudinal series of coarse hairs on the disk and laterally. Scutellum weakly trilobate. Postnotum convex, prominent, nude.

Abdomen subcylindrical in the female, truncate at tip; in the male long, slender basally, depressed outwardly.

Legs slender throughout and very long, the three pairs progressively longer but not differing greatly in length; femora and tibiæ of all three pairs of legs of about equal length; first joint of hind tarsi slightly shorter than the tibia; scraper of hind tibia without complete row of spines. Claws simple and small in the female; in the male large, unequal, and each with a single tooth on the front and middle legs.

Wings with the venation as in *Culex*.

Phalangomyia debilis, new species.

Female: Proboscis clothed with dark brownish scales. Palpi about one-sixth as long as the proboscis, dark scaled, with a few coarse bristles. Clypeus prominent, narrow, rounded anteriorly, dark brown. Antennæ

rather long and slender, blackish, with white rings at bases of joints; tori small, yellowish. Occiput blackish, clothed with narrow curved yellowish scales, broader and denser white ones along ocular margins, many erect, very slender, forked brown scales dorsally; cheeks white scaled.

Mesonotum dark brown, two bare, narrow, longitudinal lines, the antescutellar space bare, a large bare area laterally on posterior half of disk; scales rather sparse but coarse, narrow curved, yellow-brown, larger pale scales along margins and on posterior half about the three bare zones. Scutellum with pale scales, like those preceding, each lobe with a large group of coarse black bristles. Pleuræ brown, with lanceolate white scales.

Abdomen rather slender, depressed dorsally; dorsal vestiture dull black, the segments with very broad, basal yellowish white bands, the band on the second segment medianly produced to posterior margin, the white on the sixth and seventh segments occupying more than the basal halves, the eighth entirely white scaled; no differentiated lateral spots; venter uniformly dirty white scaled; many long, pale yellowish bristles at posterior margins of segments and ventrally, in appearance approaching the lateral ciliation present in many male mosquitoes.

Legs brownish black, the tibiæ and tarsi with pale luster beneath; femora pale beneath to near apices; knees pale; tibiæ narrowly pale at bases, the tips of all three pairs broadly white; tarsi unbanded. Claw formula, 0.0-0.0-0.0.

Wings hyaline, moderately broad; second marginal cell rather narrow, nearly three times as long as its petiole, second posterior cell slightly longer than its petiole; scales dark brown, paler, yellowish, at tip of wing in a spot involving tip of first vein and apical halves of forks of second vein; outstanding scales long and linear, the others not differentiated; fringe narrow, unicolorous. Halteres dark, scaled throughout.

Length: Body about 5 mm., wing 6 mm.

Male: Palpi slender, nearly uniform, upcurved, exceeding the proboscis by about the length of the last joint; vestiture brownish, without pale rings, rather sparse, short, stiff black hairs at end of long joint and along last two joints. Antennæ rather long; last two joints long, the others shorter, slender, pale, with narrow black rings at insertions of hair-whorls; hairs very long, moderately abundant, brown, shining; tori large, luteous. Coloration similar to the female. Abdomen long, slender near base, depressed beyond; white dorsal bands broader than in the female,

occupying about two-thirds of sixth and seventh segments, eighth wholly white scaled; lateral ciliation long and fine, pale yellowish. Wings nearly as broad as in the female; stems of fork-cells but slightly longer. Claw formula, 1.1-1.1-0.0.

Length: Body about 4 mm., wing 4 mm.

Matucana, Peru, 7,300 feet, June-July, 1913 (C. T. Brues).

Types and paratypes in the collections of the U. S. National Museum and of Dr. C. T. Brues; one pair deposited in the British Museum. Type, No. 18361, U. S. Nat. Mus.

Male genitalia: Side pieces from above broadly conical, straight within, convex without, about twice as long as the greatest diameter, sparsely covered with short hairs, a few long ones on the outer side and a row of about seven long ones closely crowded in a line at the tip before the insertion of the clasp filament. Beneath the inner area of the piece is cut away to two-thirds of its base, but not any at the tip. The remainder of the piece forms a ridge, elongate, about three times as long as wide, deeply excavate on the inner side in the central third, regularly convex without, the tip shortly truncate at the insertion of the clasp filament; the inner angle basally of the emargination is densely hairy, with distinct tubercles; beyond the emargination is a large dark chitinous cone, from the outer aspect of which arise (1) a heavy brown rod which expands beyond the middle into a half-disk and ends in a digitate point, and (2) a long thin leaf-like appendage, hardly widening outwardly, truncate at tip, its inner and distal edges deeply dentate, spinose, its outer angle prolonged into a long point. Within the emargination of the under side of the side piece is a broadly triangular lobe, its outer angle fitting into and surpassing the emargination, dark and densely tubercular and bearing a brush of densely crowded setæ, especially long and dense at the angle. This triangular lobe is joined by a membrane to a stout chitinous strip on the inner side, at the termination of which are two spine-like rods, inserted in tubercles, with pointed, slightly recurved tips. Clasp filament stout, enlarged a little at the base, bent beyond the middle, where it becomes a little inflated and creased; tip slender, furcate, with two widely divergent points. Harpes broad, triangularly rounded, the inner angle blunt and bearing a dense crown of short spines; outer angle forming a slender recurved spiral. Harpagones small, plate-like, single, bearing three or four stout curved teeth toward the tip. Unci small, narrow, with rounded tips. No basal appendages.

The genitalia are plainly of the *Culex* type, as shown by the presence of the prominence bearing a leaf-like appendage and the tufted harpes. The side pieces are specialized and curiously elaborated, but the undivided harpagones and the presence of the lobe indicate a low origin for this form. The lobe has disappeared from all the *Culex* proper, being seen only in low forms which are not truly *Culex*, such as *C. dyari*, *C. melanurus*, and the species of *Culiseta*. In these the characteristic structures of *Culex* have not appeared; but they are well shown in *Phalangomyia*. This genus, therefore, forms a connecting link between *Culiseta* and *Culex*, nearest to the latter and modified on its own peculiar lines.

***Aedes epinolus*, new species.**

Female: Proboscis black, with a rather broad white ring near the middle. Palpi black, white at tips and in the middle. Occiput clothed medianly with narrow curved yellowish scales, a strip of broad black scales laterally; cheeks white scaled; dorsally many erect truncate yellowish scales. Mesonotum clothed with deep reddish brown scales with golden luster. Abdomen dorsally black scaled, the segments with very narrow, basal, yellowish white bands which do not reach the sides; a series of small yellowish spots dorsally, a pair on the middle of each segment; a series of large pure white spots placed medianly at the sides of the segments; venter yellowish scaled, the apices of the segments white scaled. Legs black, the tarsi with basal pure white rings, broad on the hind legs and with the last joint white on the basal half. Claws toothed on the front and middle legs, simple on the hind pair.

Length: Body about 3.5 mm., wing 3 mm.

Ventanillas and Ancon, Peru, 3 and 4 Feb., 1914 (C. H. T. Townsend). Twenty-five females. Type, No. 18362, U. S. Nat. Mus.

A coast form, closely related to *Aedes tæniorhynchus* Wied. and *Aedes niger* Giles, and holding a position intermediate between these two with reference to extent of the tarsal rings. In *tæniorhynchus* the last hind tarsal is all white; in *niger* it is almost wholly black. *Aedes niger* occurs exclusively in the Antilles and in southern Florida; therefore it and the new form are separated by territory (Panama) in which only the true *tæniorhynchus* occurs. It follows that the new form can not be considered a derivative of *niger*. *Aedes nocturnus* Theobald (Mon. Culic., III, p. 159, 1903), from Fiji, is also closely

related, and we have still another form from the Galapagos Islands (reported by Coquillett as *Culex tæniorhynchus*, Proc. Wash. Acad. Sci., III, 372, 1901), which, however, is in too poor condition to be described. All these forms might, perhaps, be considered geographic races of a single species.

THE PERICOPID LARVÆ IN THE NATIONAL MUSEUM

(*Lepidoptera, Hypsidæ*)

By HARRISON G. DYAR

Gnophæla latipennis Boisduval.

Larva : Dyar, Proc. Ent. Soc. Wash., iv, 408, 1900.

The larvæ are uniformly marked, all the segments cross-banded, but the bands fused subdorsally, laterally, and subventrally, until a longitudinal type of marking has been evolved.

Composia fidelissima Herrich-Schäffer.

Larva : Dyar, Journ. N. Y. Ent. Soc., iv, 70, pl. iii, 1896.

Dyar, Proc. Ent. Soc. Wash., iv, 408, 1900.

The transverse banding is here developed unequally, joints 5, 6, 9, 10, and 11 being banded, the rest without bands, but the marking is not very prominent, tending to disappear in the last stage.

Composia sybaris Cramer.

This larva is uniformly banded, pale yellow, the bands on joints 5 to 11 black and blue, on joints 2 to 4 and 12 to 13 red, as are the head and anal shield; there are subdorsal and subventral rows of quadrate black-purple spots on the segments anteriorly in the incisures of joints 6 to 11; feet broadly red. Hairs sparse, short, black, with single long subdorsal white ones from joints 3 and 12 as in *Composia fidelissima*. Warts also as in that species.

Lauron vinosa Drury.

Sphinx vinosa Drury, Ill. Exot. Ent., i, pl. 23, f. 4, 1773.

Noctua horologica Goeze, Ent. Beytr., iii, (3), 242, 1779 [not seen].

Dioptris rica Hübner, Zuträge zur Samml. exot. Schmett., iii, 31, ff. 531-532, 1825.

Callimorpha ? vinosa Drury, Westwood's edition, i, 43, pl. xxiii, f. 4, 1837.

Dioptris ergolis Walker, Cat. Brit. Mus., Lep. Het., ii, 335, 1854.

Lauron domingonis Butler, Cist. Ent., ii, 120, 1876.

The above synonymy refers to the Antillean form. The form in the Greater Antilles (*rica* Hübn. = *ergolis* Walk. = *domingonis* Butl.) is darker and with less red than the form of the Lesser Antilles (*vinosa* Drury). The specimens from Porto Rico are intermediate and connect the two. The species, or a series of subspecies, is widespread over the mainland, from southern Brazil to Mexico. The oldest name for the continental form is *syma* Walker, but described without locality or indication of sex. It has no red at all. Trinidad would seem its most likely place of origin, and it should be a female. Other names are *rufilinea* and *partita* Walker from Brazil, *transita* Möschler from Surinam, *leucophaea* Walker from Venezuela, *sora* Boisduval from Guatemala, *osiba* and *choma* Druce from Ecuador, and the aberrant *chthonophyla* Druce from Mexico, which is probably a distinct species. The ordinary Mexican form is the same as *sora* Boisd. = *leucophaea* Walk. In Jamaica, a curious form, *halizoa* Druce, occurs, whether species or aberration can not be stated at present. The fore wings are entirely suffused with red, the subapical white band broken into spots by the veins. I have seen nothing like it from any other island.

Larvæ sent by Mr. Thos. H. Jones from Porto Rico do not differ from a specimen from Jamaica before me. The tubercular arrangement differs from *Composia* in the complete fusion of the two upper warts on meso- and post-thoracic segments, and the reduction of tubercles i and iv to the single-haired condition. The eggs are flatter than in *Composia*, being hemispherical, but otherwise similar. In the larval coloration, the banded effect, so characteristic of the family, appears rather weakly, affecting only the prominent segments, joints 5, 6, 11, 12, and 13, the posterior banding being farther back than in *Composia*. It is not shown in stage I, as in that genus, but begins first in stage II by an emphasis in the pigment of the warts on those segments, which, in stage III, begins to spread onto the skin, more so in successive stages until the bands are formed. The wart-hairs are sparse and coarse, moderate in length, without any long, differentiated hairs as in *Composia*. Mr. Jones indicates five larval stages, but his material shows six, and I should not be surprised if seven were found, as in *Composia*, at least occasionally.

Phaloesia saucia Walker.

Larva: Dyar, Proc. Ent. Soc. Wash., xiii, 229, 1911.

A simple type of markings, uniformly banded, the bands black, with additional intersegmental markings. Single long white subdorsal hairs on

joints 3, 4, and 12, as in *Composia*, but with an additional pair. Wart formation as in *Composia*, but the warts larger and crowded, so that tubercles i are fused on the dorsal line, iii nearly surrounds the spiracle with iv, to which it is closely appressed.

***Pericopis leucophæa* Walker.**

Larva : Dyar, Proc. Ent. Soc. Wash., xiii, 229, 1911.

Wart formation as in *Composia*, the second wart on joint 4 completely united with the first and indistinguishable. Longitudinal and transverse banding both present, the latter irregular. The markings on joint 6 are very variable, differing often on the two sides of the same specimen.

***Pericopis lycaste* Klug.**

Larva : Dyar, Proc. Ent. Soc. Wash., xiv, 56, 1912.

The body is purple, the anterior halves of the segments black, except joint 4, which is largely luteous, and joint 12, which has a little of this color. The banding is irregular, the warts yellow-brown, but black on joints 2, 3 (laterally), 5, 6 (in part), 11 (except tubercle iii), and 13 (except the anal plate). The hairs are rather soft and dense, but not concealing the body, rather long, especially toward the extremities; no single discoloured ones. The pale warts contrast with the darker body. The hairs are more developed than in the species previously mentioned.

***Pericopis thetis* Klug.**

Larva : Dyar, Proc. Ent. Soc. Wash., iv, 407, 1900.

I described this larva as *Daritis howardi* Hy. Edw., but I do not believe that there is really any specific difference between *howardi* and *thetis*. The larva possesses both longitudinal and irregular transverse banding. The general hair development is less than in *lycaste*, but is peculiar in having the short, spiny, branched hairs on wart ii, evidently of an irritating defensive nature.

For the degenerate, noctuiform larvæ of the genus *Doa*, see :

***Doa raspa* Druce.**

Larva : Dyar, Proc. Ent. Soc. Wash., xiii, 230, 1911.

***Doa ampla* Grote.**

Larva : Dyar, Proc. Ent. Soc. Wash., xiv, 15, 1912.

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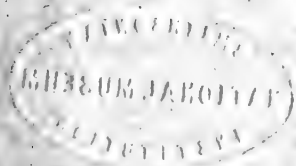
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SOME NEW AMERICAN MOSQUITOES

By DR. E. MARTINI

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Lesticocampa espini, new species.

Female.—Proboscis long and slender, 2.5–2.75 mm., about as long as the abdomen or twice the standard,¹ not swollen at tip, entirely clothed with flat brownish black scales, labella acute, dark. Palpi short, about 0.4 mm. in side view, or less than one-sixth the length of the proboscis, not quite one-third of the standard, brownish black, with a few outstanding settae. Antennae shorter than the proboscis (2 mm.), basal joint four times as long as wide, swollen at middle; terminal joints increasingly somewhat longer, dark, rugose, with basal white rings, below the whorls of long black bristles; apical small whorls present, last joints not distinctly white ringed, but with white shining pubescence; tori brownish black, shining whitish, with apical lighter excavation. Clypeus ovate, nude, blackish. Eyes black, in certain lights bronzy to silvery, broadly contiguous above (the very fine *dark* separating line corresponds entirely to that of *culicivora*); lowest part of front between eyes and tori a very distinct lighter brown-

¹ The standard I introduce here as a unit for measuring the different parts of mosquitoes and establishing their proportion. It is obvious that the absolute measurements, carefully taken, will always be the main data, but I must object to such expressions as "proboscis as long as the whole body" or "as long as the abdomen" as the only statement. Such expressions are inexact, as the length of the abdomen, and consequently the length of the whole body, differ widely in the same species and depend largely upon physiological circumstances. As the mesothorax is one continuous piece of chitin it seems to me to furnish us the best measurement, if we can find two well-marked points to mark the standard line. The tip of the scutellum is such a point, and so I add the scutellum to the mesonotum and measure from the tip of the scutellum to the foremost part of the mesonotum above the neck. This measurement may be taken as well in dorsal as in lateral aspect and seems to me largely independent of physiological changes.

ish colored rhombus. Occiput covered with flat dark scales; lower half of sides of head light golden, this color reaching farther up along the eyes, but not to the vertex (the tips of the foremost row of scales shine like tin in a certain light, and a fine nude line around the eye sometimes gives a light impression). A single collar of dark, upright forked scales on the nape; some black bristles at the lateral margins of the eyes, and few among the scales near the vertex; of the two coarse bristles at vertex in the angle between the eyes, I found only one with coppery shining tip in one specimen, yet I do not doubt that both will be found in well-preserved specimens.

Prothoracic lobes rather large, not more remote dorsally than in *culicivora*, which means relatively (for a *Lesticocampa*) not far; vestiture of broad scales, light golden on the lower parts before; behind and above, as well as the summit dark, shining bronzy; a row of dark coarse bristles following the anterior margin. Mesonotum coppery brown above, lighter toward the edges, with a dense rough vestiture of broad black scales of a submetallic coppery or bluish luster; some longer and lighter scales near the neck. In my specimens bristles are only present at the postero-lateral margins of the disk, where they form a dense fanlike double row. Scutellum narrow, distinctly trilobed; scales like those of the disk, which also disguise entirely the furrow between scutellum and mesonotum. The scutellar bristles are not well preserved in my specimen. I find about six insertions in the midlobe, about five short bristles and one long one on the side lobes; postnotum chestnut brown, with lighter reflection and a dense tuft of black coarse bristles posteriorly. Pleuræ and coxæ bearing silvery scales with a brassy shade.

Abdomen about twice (or a little more than twice) as long as the standard: 2.5 to 3 mm. in my specimen; black above with coppery to blue luster, beneath mostly white with a brassy shimmer, the two colors separated in a wavy line; the dark color reaches farther down at the limits of the joints, fading beneath into narrow dark basal bands; eighth segment entirely dark ventrally; in the mid-ventral line outstanding light scales; the first tergite laterally covered with silvery scales; end of abdomen with many long blackish hairs, some of them also present on first joint.

Wings 3-3.25 mm., or 2.5 times the standard; second marginal cell one-third of the wing length, longer and narrower and reaching nearer the base of the wing than the second posterior one; the stalk of the sec-

ond marginal one-third of the cell; posterior cross vein not quite its own length nearer base than the anterior one; broad ovate scales on forks of second and fourth and on third veins, even the outstanding scales rather broad to the sixth vein; narrow almost ligulate scales present only (in my specimen) on stems of fork veins and basal part of forks of fifth and on sixth; color of scales dark, almost blackish on the first veins, with bronzy luster. Halteres light golden at base, dark at knob.

Femora with a whitish ventral longitudinal stripe, the rest of the legs clothed with brownish black, flat, nowhere raised scales, without white markings, submetallic, shining lighter bronzy beneath; some spiny bristles present, especially on the tibia and on first tarsals; claws equal and simple. Length of femora 1.75, 1.65, 1.50 mm.; hind first tarsal longer than tibia.

Length: Actual, 3.8 mm.; calculated, head, $0.6 + \text{thorax}$, $1.3 + \text{postnotum}$ $0.2 + \text{abdomen}$, $3 = 5$ mm.

Described from three females. Type in the collection of the Institut für Schiffs- und Tropenkrankheiten at Hamburg; two cotypes in the collection of the U. S. National Museum, Washington, D. C.

Panama Canal Zone, caught near Corozal, Miraflores Lake, and Culebra, on different days in November, 1913, by myself.

Following the tables of Howard, Dyar and Knab (in mss.) the species proves to be a *Lesticocampa* by the well-separated thoracic lobes, the contiguous eyes, the long and slender proboscis, and the nude clypeus. In the species table it might be separated from *rapax* and *dicelaphora* by: "Scutellum entirely dark."

The whole animal presents a monotonous brown-blackish appearance, with lighter colors beneath; nevertheless, in the sun, legs, abdomen, and proboscis show a brilliant bluish or greenish metallic luster, which is most obvious on the occiput.

Comparing our species with the tables of Theobald and Lutz we can not use the male palpi. Nevertheless our species is easily excluded from the genera: *Rhynchomyia* by the absence of the conical prominence, from *Hyloconops* and *Goeldia* by the proboscis being not swollen, from *Trichoprosopon* by the nude clypeus, from *Sabethes* by the absence of the raised scales, from *Phoniomyia*, *Wyeomyia*, and *Menolepis* by the broad wing-scales, from *Sabethoides* by the position of the cross veins, from *Prosopolepis*, *Dendromyia*, and *Sabethinus* by the slender and long proboscis, furthermore from *Prosopolepis* by the absence of scales on

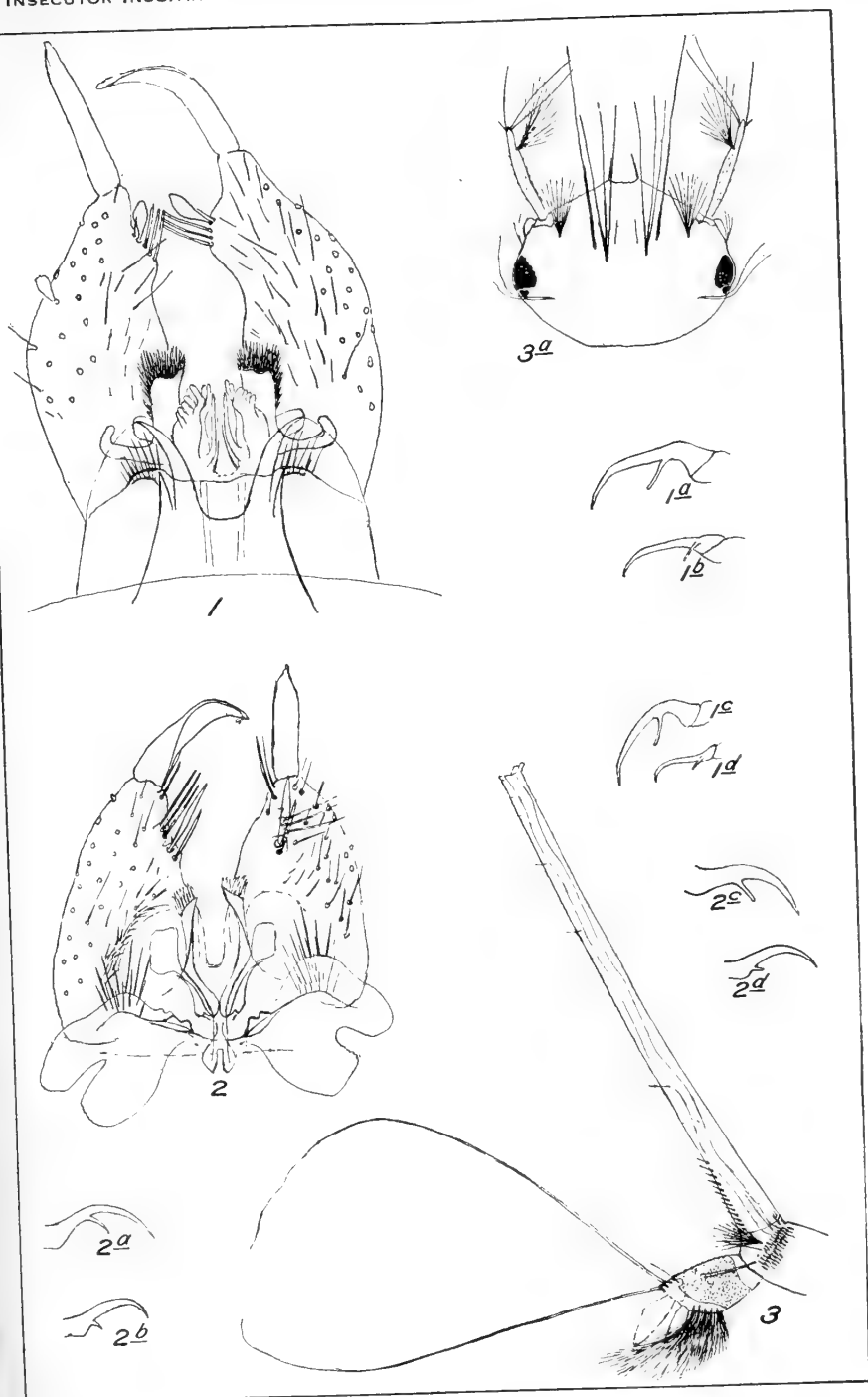
the clypeus, and by the absence of them from the metanotum from *Sabethinus*.

Lesticocampa lunata in its whole appearance comes very close to the present form, but separates at once by the small, narrow, curved, thoracic scales of *lunata*; moreover, *lunata* is a much larger species. No *Dendromyia* description, either of Theobald or of Lutz, agrees with my species, and thus I can not but take it to be a new one.

Culex prasinopleurus, new species.

Female.—Proboscis 1.75 mm. (1.2 the standard), bent up dorsally in my (dried) specimens; gradually swelling toward tip, rather stout, with short dark hairs; clothed with flat black scales above, ventrally on anterior third and at base and whitish in the middle; labellæ ovate, lighter brownish at tip, with whitish pubescence. Palpi almost 0.3 mm., one-sixth the length of proboscis (in side view), black-scaled, with some outstanding hairs. Antennæ longer than proboscis, about 1.9 mm., or 1.3 the standard; tori black; joints about four times as long as wide, rugose, dark gray, with fine white basal rings, with shining white pubescence and black hair-whorls. Eyes black, shining coppery. Face black. Clypeus black. Occiput black with dark bronzy lighter shining small narrow curved scales, which are especially light, almost pure white, around the eyes, numerous black upright forked scales present; black light shining hairs most numerous on the sides and at the border of the eyes, the pair at vertex distinctly coarser but separated from the other hairs by only a small distance; sides of head with few white flat scales; neck testaceous.

Prothoracic lobes rather large, black, sublateral, with numerous coarse black bristles. Mesonotum 1.4 mm., chestnut brown; vestiture of black, shining bronzy, minute hairlike scales, two median lines smooth; prescutellar pit only partly nude; long black coarse bristles forming three rows on disk, one median double line and a pair of rows which are simple throughout; numerous bristles at the lateral and anterior edges of disk, especially above and before the basis of wings. Scutellum lighter ochraceous gray, with scales like those on mesonotum; seven long bristles on median lobe, four long ones on each side lobe as well as smaller ones. Postnotum nude, ochraceous, darker in the middle. General impression of the sides and ventral parts dull whitish, with a greenish to ochraceous shade. Under the microscope pleuræ and coxæ ochraceous, the most prominent parts darkened, shining greenish white in certain lights;



E. Martini, del

EXPLANATION OF PLATE

1. *Culex prasinopleurus* Martini. Male genitalia; a-d, claws of same.
2. *Culex chalcocorystes* Martini. Male genitalia; a-d, claws of same.
3. Unbred larva, probably of *Culex chalcocorystes* Mart. Air tube and anal segment.



many black hairs present, forming longitudinal rows on the coxæ, which in the second are directed purely laterally, in the first more forward, in the last turned posteriorly; black scales intermixed with these bristles; on the first coxæ some bristles behind the row near apex; whitish scales running along second and third coxæ before the row of bristles; first episternum with a big tuft of hairs, intermixed with scales, a less condensed group of bristles and some scales on the detached part of the second episternum, third episternum bearing a dense row of strongly white shining hairs and white scales.

Abdomen 1.5 mm., about equal to the standard, blunt, black above, with basal white lateral spots which are visible from above, eighth segment white dorsally; venter dull whitish, with black apical bands, the chitin greenish gray, bearing white scales at base and dark ones near apex; long, black, white-shining hairs are scattered over the sternites and form apical rows on the tergites, last joints with finer hairs; first tergite with bristles only, except a median tuft of dark scales.

Wings 3.3 mm., about $2\frac{1}{3}$ the standard; second marginal cell one-fourth of the length of the wing, three times as long as its petiole, longer, narrower, and reaching nearer to base of wing than the second posterior one; posterior cross vein separated by less than twice its own length from anterior; membrane light gray; vestiture of veins of dense ligulate blackish scales. Halteres light at base, black at outer half.

Femora $I < II < III$; first hind tarsal shorter than its tibia; tip of tibia brownish white; femora broadly white beneath, with rows of spines; tibiæ the same, but the light stripe smaller, most obvious in the hind tibiæ, the rest of legs dark.

All dark scales on the body with submetallic luster, blue on dorsum of legs, abdomen, and proboscis.

Male.—Proboscis usually distinctly bent down near middle, bearing here a long hair-tuft beneath; white encircling, more extensive on ventral face than in female. Palpi about 2.4 mm. long, black; the proboscis reaches sometimes only to the second quarter of the third joint, sometimes to the proximal limit of its fourth quarter. Antennæ black and white ringed, densely plumose. White on margin of eyes more strongly marked than in female. Thorax as in female, length 1.3 mm. Abdomen 1.5 mm. or a little more in length; lateral spots hardly visible; apices of tergites denuded, giving a lighter impression. Wings with sparser and broader scales. Legs as in female, claws 1:1, 1:1, 0:0. Male geni-

talia (fig. 1): Side pieces with long coarse bristles; outer lobe subquadrate, bearing three rods, one leaf-like appendage, and one bristle. Clasp filament as long as the side piece. Inner branch of harpe with a tuft of spines, outer branch long, armed. Middle branch of harpagones divided and dentate, first branch lanceolate with acute tip.

The reason for considering this form a new species may be given as follows: In the genitalia table of H. D. & K. it runs out to No. 12. Of the mosquitoes there included most have banded legs, others banded abdomen; *equivocator* has an entirely black proboscis, with no ventral hair tuft in the male and a more reddish thorax. In *similis* the proboscis is very similar, but our form is not so robust and the male of *similis* has almost invariably a banded abdomen. *Microsquamosus* has not been found in crab-holes, it has no white margin at the eyes, which, however, in my species is not always well marked; it has white lateral spots in the male, which I was not able to make out in my males; it is more bronzy shining and lighter colored and more robust. From Theobald's *Culex scholasticus* my form is separated by its smaller size and by a difference in the claws of the male; the hair tuft on the proboscis is not mentioned by Theobald. The other differences in the descriptions might be due mostly to modes of expression. At least *microsquamosus*, *scholasticus*, and my species agree, among other points, in two very striking ones, the scale difference on the wings of male and female and the reduction of the markings on the abdomen of the male; *microsquamosus* and my form, moreover, have the male proboscis quite alike. Only by a comparison of the types of Theobald and a study of the larvæ may we be able to settle definitely the question of the identity of the three species.

Described from eight males and four females from crab-holes near Santiago de Cuba, collected by Dr. Espin and myself. Types in the collection of the Institut für Schiffs- und Tropenkrankheiten at Hamburg. Cotypes in the U. S. National Museum.

Culex chalcocorystes, new species.

Female.—Proboscis 1.9 mm., 1.7 the standard, 1 to 1.5 the length of the abdomen, rather stout but hardly swollen at tip; vestiture of black bronzy shining scales and very few fine hairs near base and apex, at the former point about eight long bristles standing out ventrally at about 60°; labellæ lighter, especially at tip, with light scales and pubescence. Palpi

in side view ¹ 0.4 mm.; reaching almost one-fifth the length of the proboscis, or almost one-third of the standard, bearing dark bronzy scales and some fine hairs, some coarser and outstanding ones near base. Antennæ about as long as the proboscis; tori hemispherical, black, lighter shining near tip; joints dark, rugose, with a small, black-bordered white ring at base and with shining white pubescence; whorls mostly of five long black hairs, with light reflection at tips; basal joint about four times as long as wide, in side view, the other joints a little longer. Eyes dark, partly with coppery luster, almost contiguous at vertex. Face black. Clypeus nude, dark, with lighter luster, ovate. Occiput black, with creamy white narrow curved scales and black upright forked ones; the former are broader near the margin of the eyes and at the sides, narrower and smaller in the middle, no dark curved scales present; the forked scales shining golden near tip in certain lights, the extreme apices often whitish, a color which may be produced in certain position in the entire lateral forked scales. Some coarse black bristles along the margin of the eyes, two especially long ones at the vertex projecting forward, separated from the other ones by a considerable interval. Sides of head clothed with flat creamy scales.

Prothoracic lobes remote, small, ochraceous gray, with a greenish white luster, with a row of three long and two small bristles and some narrow curved white scales behind. Mesonotum: Standard 1.3 mm.; chitin ochraceous, pale with dark markings; the blackest ones before and above base of wings encircled by a lighter stripe, thus forming an ocellar spot, which is fairly obvious in certain lights, though by far not so well marked as in *ocellatus*; anterior part of disk with two median broad dark stripes separated by a median ochraceous furrow, each bearing a longitudinal

¹ We emphasize the side view, since it is obvious that the proportion of proboscis to palpus must be different in dorsal aspect, the clypeus covering the basal part of both organs. While this circumstance practically does not alter the proportion where the palpi are longer or at least half as long as the proboscis, its effect is considerable in forms with very short palpi. Thus the dorsal aspect in our form gives us a proportion of almost 1:7. Moreover, the proboscis is often curved mostly in the median plane; therefore drawing its lateral aspect we get its real length, in dorsal view only its projection on the optical plane. Thus logically we should prefer the side view measurement, and as this view allows us to take the standard and the length of the abdomen as well from the same drawing, this way of measuring seems the most rational as well as the most economical. At least the method by which the proportion is established should be given in descriptions, since otherwise comparison is impossible.

dark impression on its outer half; medianly on the disk there are three oblique paler furrows running from the median depression through the dark stripes posteriorly and outwardly and ending in the pale ring of the ocellar spot; sides before and anterior margin of disk light; hind part of disk dark, with lighter impressed prescutellar area. Scutellum dark at base in a semilunar spot, border light greenish gray in dorsal view, the colors shifting with the light; all dark parts with whitish reflection, black rings at bases of bristles most obvious in the light area. The vestiture of thorax consists of black, white reflecting, narrow curved scales in not very dense position, one median very small nude line and two broader ones corresponding to the longitudinal furrows; prescutellar area smooth; two median rows of coarse black bristles with golden luster, these begin simply at the sides of the black stripes and multiply behind; a lateral short row above the base of the wings, irregular bristles before the ocellate spot and a double row of long coarse bristles at the anterior margin. Scales of scutellum much smaller and more bristle-like than those of mesonotum, evenly tapering toward the tips, which shine white and give under feeble enlargement the impression of minute hairlike white scales. 2×3 long bristles present on midlobe, four long and some shorter ones on side lobes. Macroscopically the side view gives an almost greenish impression, the integument being of greenish gray color, with the most prominent parts of pleuræ and coxæ darkened and with whitish reflections. A longitudinal row of bristles on every coxa and some flat gray scales, the first coxæ with two more bristles behind; pleuræ with rows and tufts of hairs.

Abdomen dark above, dull greenish white beneath; length 1.2–2.1 mm.; broad scales above black with strong coppery luster, dull white beneath, at tip of seventh tergite with coppery luster in some lights, eighth mostly dark beneath with bronzy reflection. First tergite dorsally dark on basal half, light greenish gray on apical, with numerous long coarse black bristles, the light color medianly interrupted by a tuft of dark coppery scales and fine hairs; lateral parts entirely nude, light greenish, shining white. Second and third segments dorsally with basal white spot. As the scales have the iridescent character of the sabethine group, some raised or turned scales here and there glisten white and in some specimens give the impression of scattered white scales. The distribution of dark and light beneath and black and coppery above varies widely with differences in light and the contraction of the abdomen. The abdominal bristles are scattered on the venter, almost confined to the apical rows

ventral tufts of the head contain respectively six and four hairs. Some of dorsally, though some scattered bristles are also present on the last tergites; hairs on eighth and ninth short, straight, and golden.

Wings 2.75 mm., 2.5 the standard, 0.65 mm. broad; first marginal cell two-sevenths of wing, four times as long as its petiole, narrower, longer, and nearer base than the second posterior one; cross veins separated by about twice the length of the posterior one. Scales broad on outer parts of third vein and forks of second and fourth, with outstanding narrower ones; no broad scales on sixth; color dark with bronzy luster, base of wings light. Halteres light at the basal, black on the apical half.

Legs entirely dark with coppery luster, shining somewhat lighter beneath; hind femora largely whitish beneath, especially at base; first and second femora only a little lightened near base, but shining lighter along the whole ventral line; spiny dark bristles on femur and especially at tibia; raised scales at knees; claws equal and simple; femora $I < II < III$, the first hind tarsal longer than its tibia.

Male.—Proboscis 1.9 mm., brown, as if jointed beyond middle and there and at tip a little swollen, entirely dark. Palpi short, about one-sixth the length of proboscis (in side view). Antennæ a little more than one-half the length of proboscis, plumose, white and black ringed; last two joints with white pubescence. Thorax 1 mm., wings 2.5; abdomen hardly longer than standard; greenish colors darker and more obvious, vestiture rougher; forks shorter; femora more whitish beneath, claws 1:1, 1:1, 0:0.

That this species is not yet known from Panama is obvious from the key in Howard, Dyar, and Knab, where among the *Culex* with very short male palpi *conservator* only has no basal abdominal spots, but is easily separated by its narrower wing-scales. The blunt tip of abdomen and the absence of post-tibial scraper put our form into *Culex* H. D. & K.

On the other hand, we find in Peryassú's paper Lutz's description of *Aedius amazonensis*, which apparently comes very near our form, *if it is a Culex at all*, for the data in that paper do not allow us to determine its position.

The main points of difference are: the greenish, not ochraceous, color my species exhibits in side view; the shorter palpi in the male (not on sixth) and female; the absence of black narrow curved scales from the occiput; the four long bristles, instead of three, on the lateral lobes of the scutellum; and the bronzy, not bluish, luster of the dorsum of the abdo-

men. Moreover, the few bristles on the lobes in our form can hardly be the same as the dense vestiture of hairs Lutz mentions for these parts; his species, with 3.5 mm. length in the male, is longer than mine; the ocellate spots of the mesothorax are not at all referred to by Lutz, no more than the peculiarities of the first abdominal tergite. Nevertheless, only a comparison with the types of Lutz could remove every doubt about the distinctness of my species.

The species is described from males and females caught by myself in November, 1913, at Porto Bello, Panama, at an old cistern. The types are in the collection of the Institut für Schiffs- und Tropenkrankheiten at Hamburg, some cotypes in the collection of the U. S. National Museum, Washington, D. C.

AN UNDESCRIBED LARVA, *CULEX CHALCOCORYSTES MARTINI*?

From the water of the same cistern, in the round opening of which I found the last described new species of *Culex*, I secured a great number of *Bancroftia* larvæ from which I partly reared the adults during my trip to New York on the S. S. *Karl Schurz*. The rest were preserved in alcohol. Among younger and older larvæ of *Bancroftia* and some pupæ I found a larva of a *Culex* which does not run out well with the (mss.) table of Howard, Dyar, and Knab, and which I therefore believe to be a hitherto undescribed one and probably that of the new *Culex chalcocorystes*. The larva is a rather small animal with a very broad head and long air tube. I took the following measurements:

Length (except the air tube and the gills) 4.5 mm., of which the head 0.9 mm., the thorax 0.6 mm., the abdomen 3 mm.; air tube, length 2.5 mm., width at base 0.2 mm., at tip 0.1 mm., length of pecten 0.4 mm. = one-sixth of the air tube, hairs of the last segment about 2.5 mm., brush 0.6 mm., longer gills 0.3 mm., longest hair of thorax about 2 mm., length of antennæ 0.6 mm.

Head broad; antennæ 0.6 mm. long, entirely dark, with a big hair tuft at about two-sevenths from the tip, the part beyond slender, bearing at the tip one double and one single bristle and one spine, the longer bristles being about as long as the antenna; basal part of the latter with sparse black spines. Near base of antennæ a tuft of about nine hairs, dorsally a tuft of three stout hairs, outside and before a single very long ciliate hair, inside a very small one; near the inner border of the eyes originates a tuft of two very fine long hairs, before the eye a tuft of three fine hairs. The

the thoracic hairs are very long; lateral hairs on the first and second abdominal segment in threes, on fourth and fifth in twos. Comb of the eighth abdominal segment with four partially incomplete rows of spines. The main hair tuft of this segment consists of about 11 stout ciliated hairs, a fine very long hair originating near its base ventrally; a double hair even farther ventrally at a somewhat greater distance. Near the dorsal margin of the comb we find another fine long hair and a very short tuft of four extremely fine hairs. Integument smooth. The anal segment is ringed and contains two times five tufts in the brush. Gills rather short and wide, the distal ones distinctly larger than the proximal ones, about half as long as the last hair tuft of the brush. Near base of the larger gill a long fine hair, originating in a deep sinus of the ring, two very long terminal hairs present in my specimen; but as there are four papillæ of which only two bear hairs, though a third shows a short broken stump, I do not doubt that there were originally four hairs present.

The air tube is very long, 2 mm., or about as long as the abdomen; 0.2 mm. at base, 0.1 mm. at apex. The pecten consists of 13 or 14 strong well-separated teeth and has a length of about 0.4 mm., or one-sixth of that of the tube; otherwise the tube appears smooth at first view; nevertheless it bears five pairs of rather fine hairs, of which none are considerably out of line. The drawing gives their exact position. Following the determination table of H. D. & K., we run the form out: 1-2-3-8-11-12-29-30-46. Here by the simplicity of the air tube hairs our form is separated from No. 47 containing the following species: *consolator*, *rejector*, *jenningsi*, *imitator*, *ocellatus*; under 50 *inimitabilis* differs in its air tube pecten consisting of no more than five teeth; *corrigani* by the simple lateral hairs on abdominal segments 3-5; *restrictor* has only four paired hairs on the tube and *latisquama* and *conservator* not more than one. Nevertheless there can be no doubt that our larva comes very close to many forms here included, among others to *ocellatus*, *latisquama*, and *conservator*, with which also the characters of the adult *chalcocorystes* are in accord.

It should be stated that in the males of all three forms mentioned the palpi are shortened. This is not very obvious in *ocellatus*, where, however, the palpi do not attain the length of the proboscis, but are about three-fourths as long. In *latisquama* the length is about half, in *conservator* they are even less, very short, as in our form. The presence of a

kind of an ocellate spot in my form again points to a relationship with *ocellatus*, which is also supported by the examination of the male genitalia.

Thus we might expect our *Culex chalcocorystes* to have a larva similar to *ocellatus*, and as the larva under discussion fits these conditions I am convinced that we are dealing with the larva of this species.

Thus it appears that there is a small group of closely related species of *Culex*, united by characters of the larvæ as well as of the male genitalia and other peculiarities of the adults, a group in which we find every degree of shortening of the male palpi. If more support were needed for the view of Dyar and Knab that the length of the palpi is entirely insignificant systematically, this group would furnish it. Or shall we take *Culex ocellatus* to be a culicine and *latisquama* an aedine mosquito, because the palpi of the former are three-fourths, the latter only half the length of the proboscis? Or would one establish a new subfamily for these two species?

Before closing I desire to express my sincere thanks to all my American friends, especially to Dr. L. O. Howard and Mr. Frederick Knab, who helped me to obtain, during my rather brief stay, not only a knowledge of the methods of the Bureau of Entomology and the wonderful progress in sanitation in Cuba and Panama, but also introduced me into the systematic study of the Culicidæ, so that I am enabled to give the above descriptions of new species.

SOME BROMELIADICOLOUS BLATTIDÆ FROM MEXICO AND CENTRAL AMERICA

By A. N. CAUDELL

The following species of Blattidæ were taken in epiphytic Bromeliaceæ in Cordoba, Mexico, 1908, by F. Knab, and in Panama by A. H. Jennings. But two of the nine determined species here listed are included by Señor C. Picado in his recent comprehensive treatise on the fauna of these plants. To the few species of Tettigonidæ recorded by Picado should be added the wingless Copiphoriine, *Dectinomima jenningsi* Caud., described in 1910 from specimens taken in Bromelias by Mr. Jennings.

The number of species of insects to be found in Bromeliads is probably greater than published records would indicate. Especially is this

probable if transient visitors are included, such as some of the recorded species very surely are. Many of the recorded forms are, on the other hand, truly bromeliadicolous. As typical examples of true bromeliadicolous insects may be mentioned the dragon fly, *Mecistogaster modestus*, the brachypterous roach, *Homalopteryx scotti*, and various species of Diptera, especially mosquitoes.

Of the Blattidæ herein treated one species at least, *Audreia bromeliarum*, n. sp., is perfectly at home in the Bromelias. The collector, Mr. Jennings, found these roaches would dive boldly into the water when disturbed. Most roaches found inhabiting these plants are apterous, brachypterous, or of a compact structure, forms apparently well adapted to an aquatic or subaquatic existence. One of the species herein described, however, *Latindia armata*, n. sp., has large elytra, seemingly but poorly fitted for such surroundings.

Aside from the systematic interest of containing three species supposedly new to science, the present lot of roaches is remarkable for the small proportion of the species before recorded as bromeliadicolous.

Ischnoptera occidentalis Saussure.

One female, Cordoba, Mexico, April 28, 1908, F. Knab.

Blattella nahua Saussure and Zehntner.

Three males, three females, Cordoba, Mexico, March 19 to April 28, 1908, F. Knab.

Blattella sp.

Four males, Cordoba, Mexico, April 5, 1908, F. Knab.

Nyctibora brunnea Thunberg.

One female (nymph), Porto Bello, Panama, A. H. Jennings.

Audreia marginata, new species.

One female, Porto Bello, Panama, A. H. Jennings.

Apparently most nearly related to *Audreia carinulata* Saussure but is structurally quite different, especially the armature of the legs. The middle and hind metatarsi of *A. carinulata* are distinctly spined beneath, while in *marginata* they are unarmed, at least those of the middle legs, those of the hind legs being missing from the unique type specimen.

Size medium, form moderately convex. Head slightly exposed. Pronotum a little broader than long, anteriorly elliptical, posterior roundly

and broadly obtuse-angulate. Abdomen decidedly broader across the middle than the widest part of the pronotum, the lateral angles of the segments not produced, the apical one or two slightly so; supraanal plate transverse, apically entire; subgenital plate about twice as broad as long and apically entire and evenly rounded; cerci short, broad, and pointed, apparently unsegmented.

Elytra subquadrate, about as long as the pronotum, apically truncate or slightly concave, the inner margins slightly overlapping in the apical half when at rest. Wings rudimentary.

Legs stout; femora with each ventral margin armed, in addition to the apical spines, with two to three or four spines in the middle and hind legs, the front ones with a single spine on the side only; tibiae short, the front ones scarcely more than two times as long as the greatest width; tarsi short, the metatarsi unarmed beneath.

Color black, the pronotum with the front and sides with a conspicuous yellow marginal stripe which extends backward onto the costal area of the tegmina; legs reddish yellow; top of head and the mouth parts also lighter in color. The head, both above and in front, the pronotum and the elytra with minute scattered punctures, more noticeable on the elytra, especially on the dorsal field, where they are arranged in parallel diagonal rows.

Length, total, 17 mm.; pronotum, 5 mm. Width, abdomen in middle, 8.5 mm.; pronotum posteriorly, 6.5 mm.

Type, Cat. No. 18359, U. S. Nat. Mus.

Audreia bromeliarum, new species.

One female, Upper Pequini River, Panama, March, 1909, A. H. Jennings.

Superficially resembling *A. cicatricosa* Rehn but readily separated from that species by the head being distinctly exposed, the front of the head being smooth and shiny instead of rugosely pitted as in *cicatricosa* and by the posterior metatarsus being shorter than the rest of the segments combined and unarmed below, while in *cicatricosa* it is fully as long as the rest of the segments and spined beneath for most the length.

Size medium, form depressed and elliptical; head distinctly exposed, not completely concealed beneath the pronotum as in some of the allied forms; vertex shallowly punctate, the face smooth and shiny; antennae about half as long as the body. Pronotum nearly truncate behind, very slightly rounded, anteriorly semicircularly rounded; mesonotum and meta-

notum posteriorly broadly concave, the latter less noticeably so, subsinuate toward the lateral margins. Abdomen equally long and broad with the entire thorax, the lateral margins of the segments with a few minute posteriorly directed serrations, the posterior angles not produced; subgenital plate entire, rounded; supraanal plate transverse and shallowly notched apically; cerci short, about twice as long as broad and apically sharply pointed, not extending nearly to the apex of the anal plates. Thorax and anterior portion of the dorsal surface of the abdomen distinctly punctate, the punctures giving way toward the hinder portion of the abdomen to minute granules and these growing less till the last segment or two are nearly or quite smooth; besides the above-mentioned punctures and granules the mesonotum and metanotum and all the abdominal segments are marked by a transverse row of small low smooth tubercles along the posterior margin, largest on the basal four abdominal segments.

Legs stout, the tibiæ short, especially the fore ones, which are scarcely more than three times as long as broad; fore femora unarmed beneath, the middle and hind ones armed with two or three spines on each ventral margin; posterior metatarsus shorter than the rest of the tarsal segments together and unarmed beneath.

Wings and elytra entirely wanting.

Color uniformly wood brown, the legs and head, except eyes, which are piceous, a little lighter; the abdomen is a shade lighter than the thorax.

Length, total, 23.5 mm.; pronotum, 7 mm. Width, pronotum posteriorly, 11.5 mm.

Type, Cat. No. 18358, U. S. Nat. Mus.

Mr. Jennings found this species to dive fearlessly into the water in the bromelias when disturbed, disappearing beneath the surface and remaining submerged for some considerable time. A number of specimens were seen but efforts to secure them proved unavailing.

***Epilampra sodalis* Walker.**

Three females, one nymph, Porto Bello Bay, Panama, A. H. Jennings.

***Pelmatosilpha rotundata* Scudder.**

One male, Porto Bello Bay, Panama, A. H. Jennings.

***Pycnoscelis surinamensis* Scudder.**

One nymph, Cordoba, Mexico, January 16, 1908, F. Knab.

***Latindia armata*, new species.**

One male, Gatun, Canal Zone, Panama, A. H. Jennings.

A large yellowish brown species differing from the described forms by having the femora of all the legs armed on one side, the middle and hind ones with a couple of spines and the front ones with three. A new genus might with justice be based on this character.

Head black, mouth parts yellowish; eyes large, separated by a space about as great as that between the antennal pits; ocelli small, round, yellowish in color and moderately prominent; front and occiput with short black hair; antennæ yellowish except the basal segment, which is black. Pronotum subelliptical, more rounded anteriorly than posteriorly, gently convex, the disk with a large transversely oval shallow depression, more distinct laterally, the whole disk with a not very dense covering of short hairs, yellowish brown in color with some darker mottlings and marked with some minute scattering round light spots with a black dot in the center of each. Abdomen with the posterior-lateral angles not produced; supraanal and subgenital plates seem to be transverse and entire, though they are somewhat injured in the unique type specimen; cerci very long, subtriangular in transverse section, and very distinctly segmented, the segments tapering at each end, the whole sparsely covered with short hairs.

Elytra yellowish brown with darker maculations, the surface with very short scattering hairs. Wings fuliginous, a row of distinct blackish spots marking the costal terminations of the radial branches; anal field slightly over half as long as anterior field with a small second fold when at rest.

Legs slender, brownish, the tarsi hairy above and below, the posterior metatarsus longer than the rest of the segments together; tibiæ with about five long apical spines and with a double series of similar spines above and the middle and hind ones with a couple beneath also, the fore ones unarmed beneath; femora, in addition to movable genicular spines, armed beneath on one margin with two spines on the middle and hind legs and three on the anterior ones.

Length, total, 12 mm.; pronotum, 2.5 mm.; elytra, 10 mm. Width, pronotum, 3 mm.

Type, Cat. No. 18360, U. S. Nat. Mus.

This ample winged roach will probably be found to not be a typically bromeliadicolous species.

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NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

Director of Entomological Stations, Lima, Peru

(Continued from page 48)

Differs from *Fabriciopsis* practically only in eyes being thickly hairy, first arisal joint elongate, and differences in frontal and cheek widths. Cheeks of female nearly two-thirds eye-height, those of male fully one-half eye-height. Male front at vertex equal to eye-width, that of female only slightly wider. Two strong marginal pairs of scutellar bristles; the third pair, situated between the two strong ones on each side, very weak. Claws of male very long, those of female much shorter.

Reproductive habit, larviposition of colored maggots, but probably not on foliage.

Type, *Neojurinia abscondens*, new species.

Neojurinia abscondens, new species.

Length of body, 12 to 14 mm.; of wing, 10 to 12 mm. Two females and two males, Santa Eulalia, Peru, about 4,000 feet, July 5, 1913, on flowers of *Buddleia occidentalis*.

Face and cheeks wholly silvery with a golden shade; parafrontals blackish beneath the pollen. All head pile grayish, even frontal except orbital area of short black hairs. Frontalia and antennae brown, palpi light yellow. Thorax blackish, thinly grayish dusted, with five narrow vittae. Pleurae brassy pollinose. Scutellum concolorous with abdomen as a rule, but sometimes of a deeper shade, nearly approaching color of thorax. Abdomen deep brownish-red throughout, both above and below. Legs blackish, the tibiae reddish approaching shade of abdomen, underside of femora brassy like pleurae. Wings faintly infusate through-

out. Both scales of tegulae with about same infuscation as wings or a little darker.

Type, female, TD4168 (fly, subtubular uterus, blackish maggots).

Huascaraya, new genus.

More allied to *Trichopora* than is *Gabanimyia*, from the latter of which it differs as follows: Wings deeply and evenly infusate, front tarsi of female conspicuously dilated in joints 2 to 4; second arisal joint always strongly elongate, three or more times as long as wide; abdomen not quite so strongly convex above. Female with two proclinate orbital bristles, and one reclinate one behind these outside of the inner reclinate bristles. Cheeks about three-fourths of eye-height in male and slightly less than eye-height in female. Proboscis fully one and one-half times head-height when extended full length.

Scutellum with short thin pile on disk and a very weak separated discal pair of bristles. Abdomen with ordinary short pile; second segment with one median discal pair of macrochaetae, one median marginal pair, one or two lateral marginal bristles, and one lateral discal bristle; third segment with marginal row, one median discal pair, and two to four lateral discal bristles on each side; anal segment with marginal and submarginal rows of bristles and a transverse discal row in front of these.

Reproductive habit, larviposition of colored maggots.

Type, *Huascaraya tegulata*, new species.

Huascaraya tegulata, new species.

Length of body, 8 to 10 mm.; of wing, 8 to 9.5 mm. One female, east base of Huascaray Ridge, about 7,000 feet, September 22, 1911, on foliage; two females and one male, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 3, 1910, on flowers of *Baccharis* sp.

Metallic bluish-black, shining; face, cheeks, and occiput silvery-white pollinose; frontalia velvet-brown, lunula pale; antennae brown; occipital pile white. Thorax with very thin silvery bloom, without tawny pollen, with four moderately heavy but faint vittae. Whole dorsum from first two antennal joints and parafrontals to abdomen metallic bluish shining, the abdomen especially polished and with posterior half of anal segment tawny-pollinose, the pollen of anal segment extended forward on sides and median line not quite to front border of segment. Venter rather silvery pollinose on each side of ventral plates, the anal segment more tawny. Femora and tibiae very faintly pollinose or hardly at all

so, the tibiae sometimes slightly reddish, tarsi black. Wings wholly deep smoky, both scales of tegulae pure snow-white. Alulae entirely infusate.

Type, female, Huascaray.

Two cotype females from Uruhuasi Bridge are TD3948 and TD3952 (flies, dissections of uterus, slides of colored maggots). The first-stage maggot has the slender type of cephalopharyngeal skeleton.

Fabriciopsis, new genus.

Runs to Brauer and Von Bergenstamm's group of *Fabricia*, *Larvae-vora*, and *Peleteria*. Description is from male only. Epistoma not strongly salient. Male with two strong proclinate orbital bristles; male front very wide, being almost double eye-width at vertex; no ocellar bristles; second and third antennal joints about equal in length, third joint strongly convex on front border; second aristal joint elongate; palpi long, very wide, and flattened on apical half; proboscis stout, a little longer than head-height; cheeks of male more than one-half eye-height, parafacials pilose.

Three sternopleural, four postsutural, three postacrostichal, and three pre-acrostichal bristles. Scutellum and abdomen densely covered with true spinelike macrochaetae, the larger ones of abdomen very slightly curved if at all; scutellum with three strong marginal pairs of ordinary macrochaetae. Abdomen subglobose, broad-ovate, much rounded. Ventral plates with spine bunches. Fourth vein continued in very short stump, apical crossvein strongly bowed in, apical cell widely open well before wingtip.

Reproductive habit, almost certainly larviposition of colored maggots, but probably not on foliage.

Type, *Fabriciopsis hystrix*, new species.

Fabriciopsis hystrix, new species.

Length of body, 11 mm.; of wing, 9.75 mm. One male, Casahuiri, San Gaban Canyon, about 4,500 feet, February 4, 1910, on flowers of *Mikania* sp.

Wholly shining black, the abdomen with a metallic black polish. Thorax, upper occipital area, and parafrontals with a bluish metallic polish, thinly silvery, leaving four indistinct broad vittae on former. Antennae wholly dark brown, palpi pale yellow, face and cheeks silvery-white, lower occiput cinereous. Occipital, cheek, and parafacial pile grayish-white, that of parafrontals black. Scutellum concolorous with abdomen

but not so polished. Tibiae with a faint brownish tinge. Wings very faintly infusate, almost hyaline, basal-cell area infuscated. Both scales of tegulae deep smoky-black.

This species strongly duplicates the coloration and general habitus of *Gabanimyia hystricosa* and *G. polita*. The wings are hardly more perceptibly infusate.

Euhystricia, new genus.

Differs from Brauer and Von Bergenstamm's characterization of *Hystricia* by having third antennal joint of male two and one-fourth times as long as the moderately elongate second joint; second arisal joint elongate, two or more times as long as wide, first joint short; palpi very short, distinct, subcylindrical, about four times as long as thick, bristly. The eyes are densely pilose. Description is from male only. Epistoma not strongly produced. Male front at vertex about three-fourths of eye-width; ocellar bristles present, proclinate-divaricate; proboscis stout, part beyond geniculation about one-half head-height; cheeks of male nearly one-half eye-height; parafacials moderately wide, bare; third antennal joint of male quite evenly broadened.

Three sternopleural, three postsutural, three postacrostichal, and three pre-acrostichal bristles. Scutellum and abdomen densely beset with subspinelike macrochaetae, those of abdomen being slightly curved, those of scutellum almost straight but very slender. Four ordinary marginal macrochaetae on scutellum, the next to front pair shorter than the others. Ventral plates with bristles only; no spines. Abdomen much shortened and rounded, subglobose-convex above, short-oval. Claws of male long, the front and middle ones longer than last tarsal joint, the hind ones shorter than others. Apical cell well open quite a little before wingtip. Apical cross vein gently bowed in at base, fourth vein continued in long stump reaching about halfway to margin of wing.

Reproductive habit, probably larviposition of colored maggots.

Type, *Euhystricia nigra*, new species.

Euhystricia nigra, new species.

Length of body, 10.5 mm.; of wing, 10 mm. One male, Casahuiri, San Gaban Canyon, about 4,500 feet, February 4, 1910, on flowers of *Mikania* sp.

Wholly black, subshining; face, parafacials, cheeks, and occiput silvery, occipital pile silvery-white; parafrontals and thorax thinly silvery,

four indistinct rather wide vittae on latter; frontalia brown, antennae and palpi wholly black. Legs wholly black, only the tibiae with a tinge of reddish-brown. Wings clear, with an infuscation in basal-cell area. Both scales of tegulae soft deep black.

This species strongly approaches the habitus and coloration of *Gabanimyia hystricosa*, *G. polita*, and *Fabriciopsis hystrix*, except that the wings are quite hyaline.

Hystriopsis, new genus.

Runs to *Hystricia* in Brauer and Von Bergenstamm's tables. May be distinguished by the epistoma being only moderately salient, not nasute; by the thickly-hairy tegulae, and by the distinctly curvate character of the spinelike macrochaetae. Female front at vertex about equal to eye-width, that of male about two-fifths of eye-width. Proboscis short, fully extended about as long as head-height, rather fleshy; palpi rather stout, slightly thickened apically. Epistoma well produced, but very weakly so compared with Hystriidae. Vibrissae inserted far above oral margin. Third antennal joint in both sexes only a little longer than the elongate second; basal arisal joints not elongate. Two to three proclinate orbital bristles in female, none in male. Ocellar bristles present, proclinate, about as strong as frontals; inner vertical bristles cruciate. Eyes hairy, extending not quite as low as vibrissal insertion. Cheeks more than one-half eye-height in both sexes. Parafacials naked.

Abnormally two, normally three sternopleural bristles; four postsutural bristles. Scutellum and abdomen densely clad with thornlike but curved macrochaetae, especially those of abdomen curved; first abdominal segment with none above except at sides, all segments with spine-bunches on median line of venter. Apical cell widely open well before wingtip, fourth vein bent at right angle, last section of same strongly bowed in, hind cross vein nearer bend, costal spine atrophied. Hind scale of tegulae thickly-hairy on whole upper surface except where covered by front scale. Claws of male much longer than those of female. Abdomen of female not emarginate behind.

Reproductive habit, larviposition probably of colored maggots not on foliage.

Type, *Hystriopsis obscura*, new species.

The hairy tegulae will distinguish this form at once from all nearly allied forms.

Hystriciopsis obscura, new species.

Length of body, 11 to 14 mm.; of wing, 10 to 13 mm. One female, January 29; 1 female and 11 males, January 30, 1913, Matucana, 8,000 feet, on foliage.

Slate-colored, blackish, slightly pollinose, more or less shining. Head silvery-cinereous, occipital pile yellowish-gray. Thorax, scutellum, and abdomen thinly dusted with gray pollen. Four thoracic vittae, the outer ones heavier and extending farther back. Abdomen distinctly brown on sides in male, blacker in female. Palpi and antennae dark brown, former lighter on tips. Wings wholly deeply and evenly fuscous, also front scale of tegulae. Hind scale of tegulae lighter, quite whitish save for the black hairs. Pulvilli and claws yellowish-whitish, except tips of claws.

Type, TD4112 (fly and dissection of uterus).

The type was dissected and uterus found to be subtubular, not strap-like; no maggots were developed as yet. Eggs were in only two rows, uterus laterally flattened.

This species bears a striking resemblance to *Rhachoepalpus nitidus*, but is much more distinctly pollinose than that species; to *R. argenteus*, but is much less distinctly pollinose than latter; and finally to *R. cinereus*, but lacks the brassy-ash tinge of that species.

Eujurinella, new genus.

General characters of *Jurinella*, but first and second arisal joints both elongate and about equal in length, about four times as long as wide; front tarsi of female conspicuously widened; third antennal joint of female about twice as long as the moderately elongate second joint, the front edge of third joint almost straight and tip of joint rounded-truncate. No ocellar bristles, parafacials hairy, two proclinate orbital bristles in female, extended proboscis a little longer than head-height; palpi flattened and widened on apical third, almost as long as proboscis beyond geniculation; eyes densely pilose, female front at vertex about one and one-half times eye-width, cheeks of female more than one-half eye-height, epistoma moderately produced.

Two sternopleural; two postsutural, the anterior and posterior; only one postacrostichal, being the posterior one; no pre-acrostichal bristles. Disk of scutellum densely beset with erect straight spinelike macrochaetae, and with two lateral marginal pairs of ordinary ones. Abdomen with spinelike macrochaetae; first segment with only one lateral marginal;

second segment with marginal row, one lateral discal, and a median discal bunch of six or eight; third segment with a marginal row which becomes double at sides in about three discal bristles, and with a median transverse bunch of eight; anal segment beset with macrochaetae on posterior two-thirds. Abdomen swollen, much broader than thorax, broad-oval in outline from above, abruptly narrowed apically. Ventral plates with short spinelike macrochaetae.

Reproductive habit, larviposition of colored maggots.

Type, *Eujurinella abdominalis*, new species.

Eujurinella abdominalis, new species.

Length of body, 9.5 mm.; same to ends of spines, 10.75 mm.; of wing, 9 mm. One female, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 3, 1910, on flowers of *Baccharis* sp.

Coloration is closely similar to that of *Corpulentosoma cornutum*, differing as follows: The dark parafrontals show a thin silvery pollen in oblique lights. First two antennal joints reddish-yellow, the third joint brownish but largely suffused with yellowish. Palpi pale yellow, with faint reddish tinge. Thorax blackish in ground color, thinly silvery; scutellum pale reddish-yellow, thinly silvery. Abdomen and legs light reddish or rufous, the abdomen of a slightly deeper shade and with faint silvery bloom in oblique lights. Wings wholly infusate. Tegulae white, the front scale smoky. Thoracic vittae fairly heavy.

Type, TD3955 (fly, dissection of uterus, slide of maggots).

This species has the same coloring and habitus as that of *Corpulentosoma cornutum*, *Eucorpulentosoma simile*, and *Epalpellus corpulentus*, all inhabiting the Uruhuasi region.

Eucorpulentosoma, new genus.

Bearing much resemblance to *Corpulentosoma*, so much so that its female might easily be mistaken as belonging with the male of that genus. The truly spinelike macrochaetae of abdomen, with spines on venter and on disk of scutellum, and the absence of the facio-orbital bristle will at once distinguish it from that genus. Description is from female only. Third antennal joint of female considerably widened apically, rounded-subtruncate, fully twice as long as the weakly elongate second joint. Second arisal joint well elongated, the arista conspicuously geniculate. Female front at vertex about equal to eye-width, widening evenly into face which is almost twice that width below. Cheeks about as long as

one-half eye-height. Parafacials narrow and hairy. Proboscis nearly one and one-half times head-height. No sign of palpi, not even bristles.

Three sternopleural bristles; only one postsutural, being the next to last; no acrostichal bristles either before or behind suture. Scutellum with a weak anterior lateral and a long posterior lateral bristle; two submarginal spinelike macrochaetae on each side, the anterior pair shorter and rather subdiscal, the posterior pair more median and with a weak divergent pair between them; a transverse row of eight weak spinelike macrochaetae near front margin. Female abdomen elongate-subquadrate, rather flattened than arched, swollen; anal segment well widened and gently but conspicuously emarginate behind, not quite as long as second and third segments together, its greatest length but little less than its basal width, its apical width a little less than its length on median line. Second and third segments with spinelike macrochaetae of varying strength along entire hind margin above, those of third segment extending in shorter ones on venter; first segment with a lateral bunch of marginal macrochaetae; second segment with a well-spread median bunch of about eight pairs of short spinelike macrochaetae on disk; third segment with two or three pairs of similar discal; anal segment sparsely set with spinelike macrochaetae on a little more than its posterior half, extending on venter in shorter ones. Ventral plates of first to fourth segments with bunches of spines gradually decreasing in length from those of first segment, which are longest and strongest. Front tarsi of female very slightly widened; claws shorter than last tarsal joint. Apical cell well narrowed terminally, fourth vein with the very faintest stump at origin of apical cross vein.

Reproductive habit, almost certainly larviposition of colored maggots.

Type, *Eucorpulentosoma simile*, new species.

***Eucorpulentosoma simile*, new species.**

Length of body, 8 mm.; same to end of spines, 9.25 mm.; of wing, 8.75 mm. One female, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 3, 1910, on flowers of *Baccharis* sp.

In coloration this species approaches *Corpulentosoma cornutum* so closely that it may best be described by comparison with that species, the difference being as follows: The occiput is silvery-white below like face; cheek-grooves deeply smoky; upper part of occiput dark, with silvery bloom. Pleurae thinly silvery-white, their ground color a little paler than that of legs and abdomen. Thoracic scutum with the four heavy and

equal vittae well defined, especially in front of suture. Disk and apex of scutellum noticeably paler. Abdomen same deep yellowish-red as in *C. cornutum*, with faint suggestions of silvery pollen showing thickly on median line of anal segment anteriorly. Wings and tegulae same in coloration as in *C. cornutum*, the alulae clear on anterior half and smoky on posterior half. Proboscis reddish, a little darker than the legs.

Epalpellus, new genus.

General characters of *Eucorpulentosoma*, but the abdomen and abdominal macrochaetae on the plan of *Corpulentosoma*, the disk of scutellum densely set with subspinellike macrochaetae, the ventral plates with only bristles, and arista not geniculate. Epistoma moderately produced. Width of male front at vertex about one and one-fourth times eye-width, the width anteriorly fully one and one-half times eye-width. Second antennal joint weakly elongate, third joint elongate-rounded and about twice as long as second; second arisal joint long. Proboscis but little longer than head-height. No palpi nor palpal bristlets. Cheeks more than one-half eye-height.

Three sternopleural bristles, three postsutural, one postacrostichal, no pre-acrostichal. Besides the erect subspinellike discal macrochaetae the scutellum has two long lateral pairs and a weak strongly divergent apical pair. Abdomen shaped like that of *Corpulentosoma*, swollen quite the same, and macrochaetae both of same nature and disposed very similarly; third segment having two transverse rows across posterior half with a few more at sides, second segment with about three irregular transverse rows and a few additional ones, and anal segment covered except broad anterior margin. Apical cell well open but narrowed for some distance terminally, the fourth vein continued in slight stump beyond origin of apical cross vein. Claws quite elongate, rather longer than last tarsal joint.

Reproductive habit, probably larviposition of colored maggots.

Type, *Epalpellus corpulentus*, new species.

Epalpellus corpulentus, new species.

Length of body, 8 mm.; same to end of spines, 9.5 mm.; of wing, 8 mm. One male, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 3, 1910, on flowers of *Baccharis* sp.

Coloration differs from description of *Corpulentosoma cornutum* as follows: Occiput silvery below, cinereous above; antennae and arista brown rather than black. Cheek pile gray like the occipital pile. Pleurae dark,

with a faint brassy-cinereous pollen; thoracic scutum with the four faintly defined vittae narrow. Abdomen and legs wholly pale reddish, the legs being of a somewhat lighter shade. Wings wholly infusate, both scales of tegulae snow-white; alulae wholly smoky like rest of wings.

This is another generically distinct form with same habitus and coloration as *Corpulentosoma cornutum* and *Eucorpulentosoma simile*.

Echinopyrrhosia, new genus.

Closely allied to *Oestrohystricia*, from which it differs as follows: Body very broad, especially abdomen. Female front at vertex one and one-half times width of one eye. Plane of lower half of facial plate (epistoma) directed anteriorly downward at an angle of 45° or almost straight forward at right angle from that of upper half (clypeus). Third antennal joint either shorter or longer than second, the second moderately to very elongate; arista thickened nearly to tip. Parafacials longer than wide to subquadrilateral. No ocellar bristles, but only a bunch of fine long hairs of equal strength and about same as hairs of parafrontals and parafacials. Female eyes quite thickly long-hairy. Part of proboscis beyond geniculation from less to more than head-height. Palpi as long as second antennal joint or shorter, filiform.

Three or four sternopleural bristles, rarely a fifth one; three or four, rarely five, postsuturals. No median pair of spinelike macrochaetae close to hind margin of mesoscutum. Scutellum not so shortened, but rather over twice as wide as long. Less to rather more than median one-third of dorsum of second abdominal segment with short erect to suberect spines. Hind margin of second segment with dense row of 20 or more spines. Nearly posterior one-half to about one-third of disk of anal segment with spines, the segment straight to faintly emarginate behind. Fourth vein bent at right to acute angle, or continued in very short stump abnormally. Hind cross vein nearly straight, subsinuate, or abruptly bent in anteriorly. All tarsi of female broad, front ones more so.

Male eyes still more thickly hairy, vertex equal to width of one eye, no orbital bristles, abdomen subemarginate at tip, none of tarsi broadened, otherwise practically as in female; even claws no longer than in female, and antennae same in both sexes.

Reproductive habit, larviposition of grayish colored maggots.

Type, *Echinopyrrhosia alpina*, new species.

This remarkable and most interesting genus subdivides into two well-marked subgenera, as follows:

Subgenus A.—Third antennal joint shorter than the very elongate second, truncate at tip. Proboscis elongate and slender, the part below geniculation normally longer than head-height. Head very elongate, the face short, the plane of epistoma at right angle to that of clypeus; parafacials as wide as or wider than long. Usually four sternopleurals, three to five postsuturals. Type, *E. alpina*.

Distribution: Lake Junin (14,000 feet) to Pachacayo (12,000 feet).

Subgenus B.—Third antennal joint as long as or longer than second, rounded at tip; second joint not nearly so elongate. Proboscis shorter and stouter, the part below geniculation conspicuously shorter than head-height. Head shorter, the face proportionately longer, plane of epistoma at obtuse angle to that of clypeus; parafacials longer than wide. Usually only three sternopleurals, three to four postsuturals. Type, *E. melanica*, new species. This subgenus also includes *E. atypica*, new species.

Distribution: Pachacayo (12,000 feet).

I forbear to name subgenera in these flies, as the multiplication of names would be only confusing. They are better designated by letters.

***Echinopyrrhosia alpina*, new species.**

Length of body, 15 to 17 mm.; of wing, 12 to 14 mm. Several females taken at Pachacayo, 12,000 feet, March 26 to 28, 1913, on flowers of *Eupatorium*-like and *Viguiera*-like composites. One female, Oroya, 12,250 feet, March 7, 1913, on rock. Hundreds of females taken by Mr. R. H. Beck at Lake Junin, 14,000 feet, March 12 to 19, 1913, semidormant under eaves of house during cold wet weather.

Head dull to pale old-gold pollinose; frontalia, first two antennal joints, palpi, and legs reddish; third antennal joint and arista blackish. Occipital pile yellow-gray to brassy. Thorax dark, thinly pollinose, with four velvety vittae, the middle pair behind suture widened and abbreviated, the outer pair widely broken by suture into two wedgelike markings. Scutellum of an obscure reddish, almost light brown. Abdomen rich brown, with a pair of transversely elongate subbrassy pollinose spots on third and anal segments, between which is a less marked median pollinose vitta, that of anal segment narrower. Venter broadly reddish. Pulvilli pale yellowish, claws except tip yellowish. Wings only faintly infusate,

the bases and veins pale reddish-yellow, except hind cross vein and last section of fourth vein which are brown. Tegulae white, the front scale slightly fuscous to yellowish tinged.

Type, TD4119, Oroya, March 7.

Uterus subtubular, intestiniform, very long and much coiled, rather thick, with thousands of irregularly arranged grayish colored maggots. Dorsal segmental plates of maggot showing blackish on disk.

Echinopyrrhosia melanica, new species.

Length of body, 13 mm.; of wing, 11 mm. One female, Pachacayo, 12,000 feet, March 27, 1913, on flowers of *Eupatorium*-like composite.

Differs from *E. alpina* in coloration as follows: Frontalia brown to blackish, first two antennal joints blackish. Legs black to dark brown, only faintly reddish tinged on femora and tibiae. Scutellum rather more pollinose, especially the broad subsilvery margin. Abdomen dull blackish or dark brown, without pollinose spots or vitta. Venter with hardly a tinge of reddish, faintly silvered. Wings with no yellowish tinge, subhyaline except the wide deep fuscous clouds on last section of fourth vein, hind cross vein, small cross vein, basal cells to costa, the irregular hind margin paler fuscous. Hind scale of tegulae pure white; front scale wholly soft deep brown to black, according to lights.

Echinopyrrhosia atypica, new species.

Length of body, 11 to 14 mm.; of wing, 9 to 12 mm. Many females, several males, Pachacayo, 12,000 feet, March 26 to 28, 1913, on flowers of *Viguiera*-like and *Eupatorium*-like composites.

Differs from *E. melanica* as follows: Frontalia reddish, first two antennal joints sometimes tinged with reddish. Legs reddish; the tarsi blackish, except metatarsi more or less tinged with reddish. Abdomen wholly reddish or reddish-brown above and below, the four pollinose spots of last two segments faintly visible, but no median vitta. Wings evenly fuscous tinged throughout, base deep blackish; small cross vein, hind cross vein, and last section of fourth vein only faintly and narrowly clouded. Tegulae same as in preceding.

Type, TD4136. Uterus subtubular, maggots and eggs irregularly arranged, maggots blackish.

Subfamily PSEUDODEXIINÆ

Tribe CORDYLIGASTERINI

Cordyligaster nyomala, new species.

Length of body, 8.5 mm.; of wing, 6 mm. One male, Ñomala, Upper Piura Valley, about 800 feet, April 27, 1912, on foliage.

Differs from *C. petiolata* Wd. as follows: Antennae wholly pale reddish-yellowish, concolorous with palpi, the shade of color being between yellow and ferruginous with a slight brownish tinge. Cheeks and parafacials light gold pollinose, nearly concolorous with the somewhat deeper golden parafrontals; lower orbits silvery and broad, upper orbits linear and golden. Occiput cinereous, pile yellowish-white. Thoracic scutum deep golden, with the four dusky vittae well defined. Pleurae silvery. Scutellum wholly black, rather shining like abdomen. The two forward abdominal fasciae silvery with a distinct brassy or golden tinge; anal segment wholly thinly silvery; preanal segment narrowly more deeply polished on hind margin. The black of abdomen is without perceptible steel-blue tinge. The first and third abdominal segments are about equal in length and noticeably longer than the second and anal, the latter being nearly equal. Legs soft blackish, faintly shining, the coxae silvery. Claws short, hardly as long as last tarsal joint. Wings well tinged with fuscous on less than costal half, the rest very faintly tinged, base faintly yellowish. Tegulae faintly smoky-yellowish, like wing bases. Halteres nearly concolorous with tegulae, faintly reddish on bases. Hypopygium pale reddish, almost color of antennae.

Family HYSTRICIIDÆ

Subfamily HYSTRICINÆ

Tribe EPALPINI

Signosoma, new genus.

General characters of *Epalpus*, with the habitus of the *E. signifera* group. Description is drawn from male only. Abdomen narrowed anally, but anal segment very distinctly emarginate and buttocklike in male. Front border of anal segment highly arcuate, the length of the segment on median line being fully as great as or greater than combined length of the first, second, and third segments on median line. Median third of hind border of first and second segments extending in a straight

transverse line, the outer third on each side extending obliquely posteriorly therefrom in a slightly curved line; the hind border of third segment considerably but not fully approaching this conformation, these segmental margins in both cases presenting the appearance of having been stamped or impressed into this form. Pollinose marking of anal segment without macrochaetae. Second and third abdominal segments with dense subpectinate row of spinelike macrochaetae on hind margin becoming less dense on sides, and without discal macrochaetae. Two lateral approximated marginal scutellar macrochaetae, and a heavy posterior marginal widely separated spinelike nearly erect pair without any weak apical pair between them; disk of scutellum with spinelike macrochaetae. One or two sternopleural, two postsutural, and no acrostichal bristles either before or behind suture.

Proboscis moderately slender, the part below geniculation equal to about two-thirds of head-height, the part above geniculation about same length. Palpi not represented by bristlets. Second antennal joint only moderately elongate, the third a little less than twice as long. Male front at vertex about equal to eye-width. No ocellar bristles. Epistoma not strongly salient.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Signosoma impressum*, new species.

This and the following allied genera to *Uruhuasiopsis* inclusive resemble closely the *Pyrrhosiinae* in habitus as well as in the feebly salient epistoma. *Eusignosoma* has been dissected and found to possess a truly straplike uterus. The other forms must be dissected and a comparative study of the first-stage maggots of the *Pyrrhosiinae* and *Epalpine* flies made before we can refer each to its proper group with certainty; but all seem closely allied with *Eusignosoma* on external characters.

***Signosoma impressum*, new species.**

Length of body, 9 mm., not including the abdominal spines; of wing, 9.5 mm. One male, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 3, 1910, on flowers of *Baccharis* sp.

Head wholly silvery-white, except the parafrontals which are greenish-black and more or less silvery, and the frontalia which are light brown. Antennae wholly dark brown or blackish, including arista. Occipital and parafacial pile grayish, parafrontal pile black. Thorax and scutellum black with silvery pollen leaving four quite heavy and nearly equal black

vittae. Apex of scutellum faintly reddish-yellow. Besides the marginal macrochaetae mentioned in the generic description the scutellum has four pairs of erect spinelike macrochaetae, one pair in middle with a group of three or four on each side. First abdominal segment has a bunch of spines at side, but the rest of margin above is bare. The median spine-pectination of hind margin of second and third segments consists in each case of four pairs successively increasing in length outward from the median pair which is shortest, with three successively shortened pairs outside these on second segment and only two such pairs on third segment. The whole venter is shining brown to blackish, with bunches of spines on median line. The whole tergum is subshining soft black, with deep golden-yellow pollinose marking covering whole dorsum of anal segment except the rounded subtuberculate and slightly separated buttocks, which each bear a bunch of a dozen or so spines. Legs are evenly rust-yellow, with tarsi wholly light yellow. Wings evenly infuscated throughout, tegulae wholly water-white to white. Halteres pale brownish; hypopygium light brown.

Signosomopsis, new genus.

Differs from *Signosoma* as follows: Description drawn from both sexes. Abdomen still more narrowed apically, only faintly emarginate and equally so in both sexes, not buttocklike. Hind margins of first three abdominal segments above almost evenly subarcuate and without any impressed effect, except that the margin of first segment is flattened in middle. Second and third abdominal segments with sparse marginal row of macrochaetae, that of third segment double on sides; both segments with discal macrochaetae in an irregular more or less double median transverse row, the row of third segment longer. The two lateral marginal scutellar macrochaetae more separated, the posterior suberect pair hardly heavier than these and removed from margin, with a shorter erect pair between them and a very weak apical pair of bristles either decussate or not decussate behind latter; the discal spinelike macrochaetae of scutellum are not quite so strong. Three sternopleural and three postsutural bristles; two acrostichal bristles both before and behind suture.

Palpi represented by bristlets. Second antennal joint strongly elongate, the third but little longer than second. Male front at vertex noticeably less than eye-width, female front at vertex about equal to eye-width. Two outer proclinate orbital bristles in female.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Signosomopsis argentea*, new species.

***Signosomopsis argentea*, new species.**

Length of body, 9.5 to 10 mm., not including the abdominal spines; of wing, 10 to 10.5 mm. One male and one female, eastern base of Huascaray Ridge, about 7,000 feet, September 22, 1911, on foliage.

Head wholly silvery pollinose with a faint brassy tinge; the parafrontals with a dusky shade due to the dark ground-color showing through; frontalia brownish-yellow. First two antennal joints reddish-yellow, third joint and arista blackish. The male has the parafrontals more distinctly brassy pollinose. Occipital pile brassy-gray, that of cheeks and lower parafacials concolorous. Thorax dusky with a thick coat of brassy-gray pollen in female and brassy pollen in male; leaving four narrow brown vittae, the outer pair widely interrupted at suture, the inner pair discontinued a little behind suture. Scutellum slightly paler in ground color, with same pollen as thorax. In addition to the scutellar bristles given in generic description there are four erect spinelike macrochaetae on each side of disk. Abdomen is broadly light reddish-brown on each side of first three segments. Very broad median subshining black vitta on first three segments, continued narrowly on front border of anal pollinose marking and covering nearly posterior half of anal segment. The deep silvery pollinose marking of anal segment has a faint brassy tinge, reaches sides of segment anteriorly and is continued on venter along front border of segment, but seen from above it appears to fade before reaching edge of segment; it is continued in a short pointed tongue on median line posteriorly, but does not reach apex of segment except very indistinctly in oblique view. The pollen extends slightly on hind border of third segment on median line and less so laterally. Venter pale reddish-brown, with bunches of spines on median line. Legs rust-yellow to pale reddish, the tibiae slightly lighter, the front and middle tarsi more yellowish, especially in female. Front tarsi of female beyond metatarsus noticeably widened. Wings evenly infuscated but not deeply so; tegulae with a slightly paler infuscation, both scales whitish centrally. Halteres pale brownish.

(To be continued.)

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AUSTRALIAN BEES OF THE FAMILY PROSOPIDIDÆ

By T. D. A. COCKERELL

The following bees, collected in Queensland, have just been received from the Queensland Museum, through the kindness of Dr. R. Hamlyn-Harris. Duplicates have been retained in the Queensland Museum.

***Prosopis cenibera* Cockerell.**

Sunnybank, Brisbane, November 19, 1913 (Hacker; Queensland Mus., 111).

***Prosopis pulchripes*, new species.**

Male: Length scarcely 4 mm.; extremely slender, with a claviform abdomen narrowed at base; antennæ very long, about 2 mm.; black, marked with clear lemon yellow; abdomen rufopiceous, with extreme base of second segment, broader base of third with adjacent apex of second, and base of fourth more obscurely, pale ferruginous; head rather broad, face shining; mandibles, labrum, and face below level of antennæ all yellow, the supraclypeal mark large, quadrate, rounded above, lateral marks broadly extended up sides of front, ending in a point, at an angle of about 50°, at level of middle of front; a small yellow mark on cheeks behind mandibles; middle of front strongly depressed; scape yellow in front; flagellum very pale reddish beneath, black above; thorax elongated, mesothorax and scutellum shining, very finely punctured; scutellum wholly black; area of metathorax dull; upper border of prothorax, and tubercles, very pale yellow; tegulæ pellucid testaceous; wings clear hyaline, nervures and the large stigma dark fuscous, outer t. c. and r. n. weakened; b. n. falling very far short of t. m.; first r. n. joining apical

corner of first s. m.; second s. m. about as broad as high; anterior legs inserted far from the other pairs, which are close together; legs bright yellow, anterior femora and tibiæ with dusky spots behind, middle femora with a black patch beneath, middle tibiæ with a large black saddle-like patch, hind femora black (but trochanters yellow), hind tibiæ with nearly apical three-fifths black, hind tarsi dusky except at base; abdomen shining.

Habitat: Brisbane, Queensland, October 3, 1912 (Hacker; Queensland Mus., 128). Runs in my table of *Prosopis* (except that abdomen has some red) to 36, and falls near *P. primulipicta* and *P. minuscula*. It is much smaller and more slender than *primulipicta*; the general appearance is that of *minuscula*, but the face markings are quite different.

***Prosopis bacillaria*, new species.**

Male: Length about 4 mm.; slender, like *P. pulchripes*, but differing as follows: Face broader; malar space yellow, but no yellow extending on cheeks; lateral face marks above level of antennæ rapidly narrowing, ending in a slender point; mesothorax dull; yellow of upper border of prothorax reduced to a pair of short lines; tegulæ brown, with a yellow spot; b. n. ending nearer t. m.; anterior femora black, yellow at apex (but trochanters yellow); middle femora black, yellow at apex, and their tibiæ broadly black in middle; the claviform abdomen even a little more slender, entirely black, the first three segments dull, with shining apical margins, the others shining.

Habitat: Brisbane, August 10, 1913 (Hacker; Queensland Mus., 118).

***Palæorhiza parallela disrupta*, new variety (subspecies?).**

Female: Rather less robust than usual, with the yellow of the scutellum divided into two very broad oblique lateral bands; postscutellum yellow with a small green mark in middle; facial stripes chrome yellow instead of ivory color, as also the stripes along posterior orbits; subquadrate yellow patch behind tubercles present; tibiæ broadly yellow at base, basal two-fifths of hind tibiæ yellow.

Habitat: Kuranda, Queensland (Dodd; Queensland Mus., 127). A curious variety or subspecies, or possibly species, with some approach to *P. permiranda* in its characters.

Euryglossa anthracocephala, new species.

Female: Length $5\frac{3}{4}$ mm.; robust, head and thorax coal black; head without pale markings; tubercles broadly lemon yellow, but no other light markings on thorax; mandibles obscure reddish; face shining, not hairy; clypeus microscopically reticulate, and with sparse small punctures; scape slightly stained with reddish; flagellum rather long, wholly dark; mesothorax shining, duller in front and at sides; scutellum shining; area of metathorax smooth and polished; tegulæ fuscous, but a pale lemon yellow callus at base of wings; wings reddish-hyaline, stigma and nervures rufous; first r. n. joining extreme basal corner of second s. m.; second s. m. broad, not produced above; legs reddish-black, anterior knees and tibiæ in front yellow; anterior femora swollen; hind basitarsi and apex of tibiæ behind covered with silvery-white hair; hind spur very finely pectinate; abdomen broad, rather light reddish suffused with dusky, segments 2 to 4 with large lemon-yellow laterobasal spots; venter pale red, without markings.

Habitat: At flowers of *Eugenia*, Brisbane, December 5, 1913 (Hacker; Queensland Mus., 102). Resembles *E. maculata* Sm., but easily distinguished by the color of the legs.

Euryglossa hemixantha, new species.

Male: Length about $4\frac{1}{2}$ mm.; black, the abdomen dark red-brown, with the apex pale rufotestaceous; head very broad; mandibles (except rufous apex), labrum, clypeus, low transversely elongate supraclypeal mark, lateral face marks and scape, all bright lemon yellow; lateral face marks broad below, filling space between clypeus and eye, suddenly truncate at level of antennæ, but with a short linear process extending beyond along orbit (the whole like a closed, gloved hand, with index finger pointed); flagellum long, the basal two-thirds dull pale brown beneath; front dull; disk of mesothorax somewhat shining; scutellum and base of metathorax shining; tubercles broadly yellow; tegulæ testaceous, with a cream-colored spot; wings hyaline, stigma and nervures sepia; both recurrent nervures meeting the transversocubitals; second s. m. broad; legs bright lemon yellow; middle tarsi fuscous apically; hind femora with a dark fuscous apical patch above; hind tibiæ piceous, with a rufous apical patch behind; hind tarsi brown; abdomen rather broad, pale rufous at apex, second and third segments each with a small transverse yellow patch at side basally; venter yellow, suffused by ferruginous apically.

Habitat: Brisbane, December 5, 1913 (Hacker; Queensland Mus., 106). Resembles *E. sinapipes* Ckll., but the head and thorax are scarcely at all hairy, there is no yellow mark on scutellum, the eyes are not green, etc. Although so very different in appearance, it is related to *E. anthracocephala*; so much so that I wondered whether it could be its male, but concluded that this was impossible.

Euryglossina chalcosoma Cockerell.

Brisbane, December 5, 1913 (Hacker; Queensland Mus., 107).

Euryglossina perpusilla (Cockerell).

Brisbane, Queensland, November 19, 1913, male, female (Hacker; Queensland Mus., 100, 101). The male is new. It is like the female, but has mandibles, labrum, clypeus, supraclypeal area, very narrow lateral face marks (extending as a line along orbits nearly halfway up front) and scape in front, all light yellow. The flagellum is pale testaceous beneath. Tubercles bordered with yellow. Genitalia light yellow; stipites broad and blunt, the apical hairs very short, inconspicuous; sagittæ rather stout.

Euryglossella atomaria, new species.

Female: Length about 3 mm.; head approximately circular; mandibles yellow, black at apex, red subapically; labrum black; clypeus broad and low, yellow, with the inferior and lateral margins black; semicircular yellow supraclypeal area nearly as large as clypeus; yellow lateral face marks in form of broad bands along the orbits, broadened below, but not reaching clypeus or supraclypeal area, notched above, just before the truncate end at middle of sides of front; lower part of cheeks with a triangular yellow patch, its longest side along orbit; scape black; flagellum very short and stout, dark above, rufous beneath, covered with short bristles; last joint of maxillary palpi long; thorax black, in lateral view curiously long and flat, like the cephalothorax of a spider; mesothorax minutely tessellate and punctured; tegulæ pellucid with a large yellow spot; wings hyaline, stigma and nervures pallid, the stigma broadly margined with brown; no trace of a third discoidal cell, but an incomplete second s. m. is present; legs clear lemon yellow, with middle and hind tibiæ (except in front) and tarsi fuscous; abdomen shining purplish black, very pale yellow at apex. The pulvilli are very large.

Habitat: Brisbane, Queensland, August 10, 1913 (Hacker; Queensland Mus., 120). Very distinct from *E. minima* Ckll. by the shape of

the head and the details of the markings. There is a strong superficial resemblance to the male of *Euryglossina perpusilla*.

***Pachyprosopis barbata*, new species.**

Male: Length about 4 mm.; shining black, with very little hair, except that the whole face below antennæ (the tegument of which is black) is covered with coarse pale dull ochreous hair; mandibles red subapically; flagellum very dull red beneath; front rather strongly punctured; mesothorax sparsely punctured; tegulæ fuscous with pallid margins; wings hyaline, faintly dusky apically, stigma and nervures brown, nervures partly pallid; first r. n. meeting first t. c.; second s. m. broad, but pointed above, not of the extreme type of typical *Pachyprosopis*; legs bright ferruginous, the femora black beneath, the anterior femora blackest; abdomen broad, shining black, light ferruginous at apex.

Habitat: Brisbane, November 19, 1913 (Hacker; Queensland Mus., 98, 99). Resembles *P. aurantipes* in the hairy face, but the legs and mandibles are quite differently colored. The abdomen is rather suggestive of *P. flavicauda*.

A NEW CARPENTER BEE FROM CALIFORNIA

By T. D. A. COCKERELL

I have received through Mr. S. A. Rohwer both sexes of a very fine *Xylocopa* bred by Mr. H. E. Burke in the mountains of California. Mr. Rohwer had already made a preliminary study of the species, and had determined that it was probably new, unless described from Mexico. It proves to be a quite distinct species, related to *X. californica* Cresson and *X. arizonensis* Cresson, closely related forms, apparently only sub-specifically distinct, already known to occur in California. *X. amblardi* Pérez, described from three males collected in California, remains unknown to me. It is related to *X. virginica* Drury, and has a yellow face in the male. For references to other, quite different, California species see Bull. So. Calif. Ac. Sci., III, June, 1904, pp. 86-87.

***Xylocopa libocedri*, new species.**

Male: Length about 22 mm., of anterior wing 19 mm.; head rather small, closely punctured, black, obscurely purplish at sides of face, the supraclypeal area green; eyes prominent, separated on vertex by a dis-

tance about equal to length of scape ; mandibles bidentate ; labrum with a median tubercle ; clypeus roughened with irregular punctures, with a shining vertical ridge on the median third or more, the lower margin in middle broadly depressed, smooth and shining ; antennæ wholly dark, third joint nearly as long as following three together ; hair of head black, mixed with fuscous on face, and with white on vertex ; thorax green, the mesothorax (except the broadly blackened disk) yellowish green, the sides with various shades of blue-green and yellowish green ; mesothorax and scutellum closely punctured ; hair of thorax short and quite dense, mainly grayish-white, but fuscous on tubercles, behind wings, and on middle of mesothorax ; tegulæ dark green ; wings fuliginous, shining purple, the apex slightly pallid ; femora submetallic, tibiæ blue-green, tarsi piceous ; hair of legs mainly black, but hind tibiæ with much whitish hair on posterior side ; hind tibiæ with a small rounded black tubercle on outer side before the middle, and the outwardly directed apical margin bilobed ; abdomen shining bluish green, the color subglaucous, not very bright ; punctures irregular but strong, closer on second and third segments than on fourth ; first segment with much white hair, second with white hair at extreme sides, fourth with a thin and narrow apical band of white hair ; sixth segment and apex with dense black hair ; venter with white hair in middle and much black laterally.

Female : Length about 24 mm. ; similar to the male in most respects ; face broad ; vertex strongly green ; median line on clypeus very feeble ; cheeks flattened or subconcave behind eyes, with large sparse punctures ; black area on mesothorax very large ; hind tibiæ with a large bidentate process a little beyond the middle, and an oblique keel before that ; hair of hind tibiæ and tarsi black ; wings very dark ; no hair band on fourth abdominal segment ; sides of venter with tufts or patches of white hair, conspicuous from above toward apex. There is a small tubercle before the anterior ocellus.

Habitat : Yreka, California, bred from nests in *Librocedrus decurrens* by Mr. H. E. Burke, March 25, 1912. One male (type), two females. This species is readily known from *X. arizonensis* by the abundant pale hair of the thorax, and in the male by the pale hair band on the abdomen. The wings are grayer in tint than those of *arizonensis*, which are dark reddish fuliginous. Comparing individual specimens of *librocedri* with *arizonensis*, differences of sculpture can be detected, but in view of the variability of *arizonensis* these do not appear to be specific. The

group of metallic *Xylocopa* with dark face in the male, represented by *librocedri*, *arizonensis*, and *californica*, belongs to the Pacific coast and the arid southwest, and is not related to the species of tropical Mexico and Central America. A related but distinct group, with light face in the male, is that of *X. virginica* and *texana*, with the little-known *amblardi*, said to occur in California. A marked feature common to both of these groups is the triangular area with strongly pectinate border on sixth abdominal segment of female. It is also to be noted that there exists a variety of *arizonensis* in which the clypeus of the male has a cream-colored spot (Entom. News, Nov., 1907, p. 395). The mandibles of *X. arizonensis*, *librocedri*, and *virginica* are bidentate in the female, not tridentate as in the European *X. violacea*. The association with *Librocedrus* (*Heyderia*) *decurrans* may be accidental; but it is interesting to find a member of what appears to be a rather old type of North American bees connected with a plant-genus which we know to be an ancient and now waning member of the flora.

Type, Cat. No. 18460, U. S. Nat. Mus.

NEW MICROLEPIDOPTERA FROM HAWAII

By AUGUST BUSCK

Mr. Otto H. Swezey, of the Hawaiian Sugar Planters' Association Experiment Station, has recently sent to the U. S. National Museum a third large contribution to the knowledge of Hawaiian Microlepidoptera, consisting of 50 bred species, each in liberal and well-mounted series. Most of these are known species or cotypes of new forms described by Mr. Swezey, but the biological facts are all new, and Mr. Swezey will himself give a complete account of these. He has asked me to determine and describe the following new species.

Platyptilia lantana, new species.

Labial palpi short, dark fuscous, irrorated with yellowish white and with apex of second and of third joint yellowish white. Face and head fuscous. Face without projecting cone. Antennæ dark brown dotted with light yellow. Thorax fuscous with posterior edge broadly white. Forewings cleft to apical two-thirds; segments broad, termen of the first with one of the second with two sinuations; ground color whitish ochre-

ous strongly mottled and irrorated with dark fuscous and blackish scales, which form an ill-defined dark shade on basal half of dorsal edge, a large, ill-defined dark area at costal third extending attenuated along costa nearly to base, and a broad, dark fascia across the outer ends of the lobes; this fascia is externally edged with white scales and the narrow apical strip beyond is light ochreous with a dark brown sinuated line at the base of the cilia; small black scale tufts beyond the edge on the middle and at apical third of dorsum. Hindwings dark fuscous with ochreous cilia; third lobe with a large black scale tuft just before apex and a few scattered projecting black scales along the entire dorsal edge. Abdomen ochreous fuscous, each joint tipped with white posteriorly; fourth joint shaded with black. Legs fuscous, tarsal joints with broad white annulations.

Alar expanse, 11 mm.

Habitat: Honolulu, Oahu, Hawaiian Islands.

Type, Cat. No. 18429, U. S. Nat. Mus.

Mr. Swezey informs me that this species was introduced purposely from America into Hawaii some 12 years ago by Mr. Koebele, along with 7 other species of Lantana insects, and it should thus undoubtedly be credited to the fauna of Central America, though I have no actual specimen from there.

Petrochroa, new genus (family Cygnodiidae).

Type, *P. swezeyi* Busck.

Labial palpi long, curved, nearly smooth; both joints slightly thickened and roughened in front; terminal joint nearly as long as second, pointed. Antennae three-fourths serrated; basal joint with strong pecten. Face and head smooth. Forewings smooth, elongate ovate, apex somewhat produced, pointed; 12 veins; 7 and 8 out of 6; 7 to costa; rest separate; 2, 3, 4, and 5 nearly equidistant; 1 *b* furcate at base. Hindwings more than half the width of the forewings, pointed; 6 and 7 stalked, enclosing apex; rest of the veins separate; 8 reaching to apical fourth; space between 7 and 8 large and upper cell vein weak; internal vein to base of 6 + 7 strong; in the males the venation in both wings may often be distorted; in the forewing vein 7 may be nearly or quite obsolete; in the hindwings large male sense tufts dislocate the veins; female frenulum consisting of three spines. Posterior tibia hairy above.

The genus is allied to *Coelopoeta* Walsingham, but differs in having vein 5 of the forewing free and in having the cell in the hindwings closed and veins 2 to 5 separate.

Petrochroa swezeyi, new species.

Labial palpi light ochreous with tip of terminal joint black. Face, head, and thorax dusky brownish ochreous, with a strong iridescent sheen. Antennæ dark brown, sprinkled with light ochreous on the terminal joints. Forewings dark brownish fuscous with an ill-defined, whitish ochreous costal spot at apical third faintly connected across the wing with an opposite similar dorsal spot; cilia lighter ochreous fuscous. Hindwings uniformly light fuscous with concolorous cilia; in the males with a strong tuft of broad scale-like hairs at the base of costa. Abdomen silvery fuscous. Legs dark brown with narrow light ochreous annulations on the tibiae and on the tarsal joints.

Alar expanse, 7-8 mm.

Habitat: Kaimuki, Oahu, Hawaii.

Type, Cat. No. 18430, U. S. Nat. Mus.

Named in honor of the industrious collector, Mr. Otto H. Swezey, who bred this species from small cases found on rocks.

The cases are made of tough silk and completely covered with small particles of sand and rock, which give a dark reddish brown color to the specimen before me. The cases are 4.5 mm. long and 2 mm. broad, somewhat flattened and with a transverse slit in one end.

Petrochroa dimorpha, new species.

Labial palpi light ochreous, strongly shaded externally with black. Face and head light ochreous. Antennæ light ochreous, in the females annulated with dark brown through the entire length, in the males annulated with dark brown only on outer two-thirds; basal pecten long, black. Thorax light ochreous with dark brown patagia. Forewing dark brown on the costal two-thirds, light ochreous on the dorsal edge; a short, longitudinal, black streak a little before the middle of the wing on the border line of the two colors; a large, round, black spot at the end of the cell slightly edged with white scales. Cilia ochreous. Hindwings light silvery fuscous, with ochreous cilia; in the males with costal tuft of stiff hairs. Abdomen dark silvery fuscous above, ochreous on the underside. Male anal tufts large, ochreous. Legs straw-colored with black bars and annulations.

Alar expanse, 9–10 mm.

Habitat: Honolulu, Hawaiian Islands.

Type, Cat. No. 18431, U. S. Nat. Mus.

A pretty little species which superficially reminds one of *Aroga paraplutella* Busck. The larva feeds, according to Mr. Swezey, in dead leaves and grass on the ground. Both this and the foregoing species come to lights at night.

Batrachedra cuniculator, new species.

Labial palpi light straw-colored with conspicuous, transverse, black spots exteriorly, one on the second joint, one at the base of terminal joint, and one below the tip. Face and head light yellow. Antennæ darker ochreous with narrow black annulations. Thorax light ochreous. Forewings light ochreous, somewhat darker toward the tip, minutely dusted with black; a conspicuous black dash on the cell, another obliquely before it on the fold, and a third at the end of the cell; cilia straw-yellow. Hindwing light ochreous fuscous with yellow cilia. Abdomen light yellow; on the dorsal side of first and second joints is a peculiar, flattened, short-scaled whitish area surrounded by longer scales; this is more noticeable in the females than in the males. Legs light ochreous.

Alar expanse, 9–10 mm.

Habitat: Kewalo, Honolulu, Hawaiian Islands. July.

Type, Cat. No. 18432, U. S. Nat. Mus.

Bred by Mr. Swezey, who writes that it is a leaf-miner in sedges, *Scirpus maritimus*, in the swamps near the coast; it also bores in the stems of *Cyperus laevigatus*, which is leafless and has cylindrical stems resembling rushes. Mr. Swezey considers this moth a recent introduction into Hawaii; it had not been noticed until about a year ago.

Acrolepia nothocestri, new species.

Labial palpi blackish brown, with narrow white annulations, two on each joint, and with white tips. Maxillary palpi yellowish white. Face yellowish white. Head bright yellow sparsely sprinkled with black. Antennæ light yellow with narrow deep black annulations. Thorax dark greenish yellow strongly overlaid with black; patagia yellow with blackish fuscous base. Forewing bright canary yellow, strongly transversely reticulated with black; the black scaling is emphasized in three large, ill-defined costal blotches, which reach halfway across the wing, one at basal fourth, one just before the middle of the wing, and one

beyond the middle; the last one is the most prominent, but all are vague; on the middle of the wing near base is a small round white spot, on the middle of the dorsal edge is a large, transverse, kidney-shaped white spot; at basal third is a similar, somewhat smaller, dorsal white spot, but not touching the edge; at the end of the cell is a round white spot; all the white spots are more or less edged with black; apical part of the wing beyond the cell is yellow without the black reticulation, but with two blackish, ill-defined costal spots, the outer of which is diffused into a large triangular dark shade, reaching halfway across the wing. Cilia yellowish white with conspicuous blackish brown pencils alternating with broader white intermediate spaces. Hindwing dark fuscous with silvery fuscous costal edge and with apical cilia whitish. Abdomen brownish fuscous above with first joint silvery and with light yellow underside and anal tuft. Legs light yellowish fuscous, tarsal joints with broad black annulations.

Alar expanse, 12 mm.

Habitat: Olympus, Oahu, Hawaiian Islands.

Type, Cat. No. 18433, U. S. Nat. Mus.

This conspicuously colored species is a leaf-miner on *Nothocestrum*. (O. H. Swezey.)

A NEW SATURNIAN FROM MEXICO

(*Lepidoptera, Saturniidae*)

By HARRISON G. DYAR

***Copaxa mannana*, new species.**

Male: Fore wing falcate; antennæ fully doubly bipectinate, the branches equal. Brown; costa and collar gray; fore wing with a slit-shaped hyaline discal patch; lines faint, purple, the inner irregular, the outer oblique to costa before apex, faintly doubled within. Hind wing rosy red from costa to over cell, except margin; a large discal ocellus, black, with inner blue powdery crescent, broadly buff-yellow ringed, then a black ring; two mesial lines, fading out in the pink area, the outer crenulate. Expanse, 95 mm.

Female: Fore wing quadrate, the outer margin straight; antennæ shortly singly bipectinate; yellow, irrorate with gray; costa and collar gray; discal hyaline slit small; lines as in the male, but distinct and

broad; terminal space washed with pink, except at tornus; a subcostal, dark mark followed by pink and purple scales. Expanse, 100 mm.

Types, male and female, No. 18427, U. S. Nat. Mus.; Guerrero Mill, Hidalgo, Mexico, 9,000 feet (Mann and Skewes, collectors; gift of B. Preston Clark).

SOME NOTES ON THE LIFE HISTORY AND HABITS OF LAURON VINOSA DRURY

(*Lepidoptera, Hypsidæ*)

By THOMAS H. JONES, Rio Piedras, Porto Rico

The larvæ of this moth are very destructive during the fall and winter months to a plant, *Heliotropium indicum* L., of the family Berraginaceæ, which occurs as a weed in and about the sugar cane fields of the Experiment Station of the Porto Rico Sugar Producers' Association at Rio Piedras.

Heliotropium indicum has, according to Prof. Ignatius Urban's Flora Portoricensis, a wide distribution throughout the tropical regions of both hemispheres. Professor Urban gives the following Porto Rican common names for the plant: "cotorrera," "raba de alacran," and "yerba de cotorra." Cook and Collins give the additional common name "yerba de culebra" and state: "A decoction of this plant is said to act as a diuretic."¹

For the past three seasons I have observed *Lauron vinosa* to be very abundant on its food plant at Rio Piedras, the injury caused by the larvæ often causing the complete death of the attacked plants. I have never seen the larvæ on any other plant than *Heliotropium indicum* and as yet have noticed no natural enemies.

DESCRIPTION OF STAGES

The egg is glistening, pearly white, and shows fine reticulations on all surfaces when seen under a lens. It is irregularly hemispherical in shape, with the center and edge of the flat side slightly raised. The diameter of this surface is about 0.9 mm.

¹Cook, O. F., and Collins, G. N. Contributions from the U. S. National Herbarium, Vol. VIII, Part 2, 1903, p. 158.

The following descriptions of larvæ, pupa, and adult are from reared specimens.

Larvæ just after issuing from the eggs are about 2.5 mm. long, the head about 0.5 mm. wide. The body is dirty white, moderately covered with black hairs, the longest about 1 mm. The eyes are shining black, the mouthparts brownish black, the cervical shield, tubercles, and markings on the legs black.

The larva takes on a greenish tinge after feeding and the fourth, fifth, tenth, eleventh, twelfth, and thirteenth body segments become darker because of the presence of pigment, reddish brown in color, which, while present elsewhere on the body, is more prevalent on these segments. The body becomes slightly "humped" at the fourth and fifth segments, a character which persists through the remaining larval instars.

Second larval instar.—Ground color of body greenish yellow, yellow being predominant on first, second, third, sixth, seventh, eighth, and ninth segments. The other segments darker because of wine-colored areas. Head, thoracic shield, and markings on legs black. Wine-colored markings on prolegs. Longer hairs black except two each on second, third, and eleventh segments, arising from tubercles on dorsal surface of body. These hairs are light tipped.

Third larval instar.—Tubercles on fourth, fifth, tenth, eleventh, twelfth, and thirteenth segments have dark metallic blue color. Lower tubercles on second and third segments, two lower tubercles on sixth, seventh, eighth, and ninth segments, all tubercles on first segment, and areas on outside of prolegs dark. The predominant yellow color on first, second, third, sixth, seventh, eighth, and ninth segments darker than in second instar, being of an orange color. Body marked with wine-colored areas, more abundant on fourth, fifth, tenth, eleventh, twelfth, and thirteenth segments.

Fourth larval instar.—Coloration much the same as in third larval instar.

Fifth larval instar.—Full-grown larva. Length about 24 mm. Head and areas on true legs black. First, second, third, sixth, seventh, eighth, and ninth segments orange yellow with wine-colored markings. Remaining segments dark wine colored with light markings. Tubercles on first, fourth, fifth, tenth, eleventh, twelfth, and thirteenth segments, lower tubercles on second and third segments, two lower tubercles on sixth, seventh, eighth, and ninth segments, cervical shield, areas on outside of prolegs,

glistening metallic blue. Longer hairs on body black, except the six noted under second larval instar. Approximately the distal half of these are light in color. Shorter hairs on body are also light. All hairs barbed.

Pupa.—Dull black. Naked except that it is suspended in a web of silk. Length about 12 mm.

Adult.—General color of wings, above and below, black. Above, a broad white dash near apex of front wings extends from near costal margin nearly to the outer margin. This white marking is also present on the under surface. Veins in proximal portion of fore wings, and in greater portion of hind wings, prominent because of semitransparent areas between. On the fore wings, above, somewhat back of the white marking is a similar parallel one of chrome orange. The chrome orange also occurs along the costal and inner margins from this point to the body and is present below on the proximal costal margin, on the dorsal and ventral sides of the thorax and on the rear margin of the hind wings. Abdomen and legs are bluish black with whitish markings, more noticeable in two wide stripes extending along the ventral side of the abdomen.

Wing expanse of largest females, 39 mm.; of largest males, 31 mm. The branches on the black bipectinate antennæ are longer in the case of the male.

LIFE HISTORY

The eggs are placed on the undersides of the leaves of the food plant, in no regular arrangement and in groups of varying size, the convex side of the egg toward the leaf surface.

The young larvæ feed to some extent, after issuing from the eggs, upon the eggshells, after which they feed gregariously upon the leaf upon which the cluster of eggs has been placed, feeding from the under surface. Later in the larval period the habit of feeding together is lost and larvæ in the later instars, when in close proximity on the plant, are often seen striking at one another, the body from the sixth segment forward being rapidly "whipped" about. The larvæ are not, however, so far as observed, cannibalistic.

While the young larvæ only skeletonize the leaves, the older larvæ not only feed upon the entire leaf, with the exception of the large veins, but also upon the epidermis of the stalks and branches of the host plant. It is probably this feeding habit which does most injury.

I have never taken pupæ in the field. In breeding jars containing soil, the pupæ were suspended above the soil surface in loose webs of silk.

LENGTH OF EGG, LARVAL, AND PUPAL STAGES

With eggs taken in the field in November and kept in the laboratory, the longest time from date of collection to date of hatching was seven days.

Six larvæ were reared in glass vials in the laboratory, they being kept provided with fresh food. The larvæ were from eggs that hatched November 2-3. They pupated November 23-25 and adults issued December 3-6. Of the five larval instars, the last was considerably the longest, requiring about eight days. The first three required about three days each and the fourth about four days.

Larvæ from eggs that hatched at the same time, but which were kept under somewhat crowded conditions in a breeding jar, required more varying periods of time to develop, though some adults issued in the jar as soon as those in the vials.

A NEW SYNTOMID FROM CUBA

(*Lepidoptera, Syntomidæ*)

By HARRISON G. DYAR

Zellatilla, new genus.

Fore wing with veins 2, 3 before the angle of the cell, 4 and 5 approximate at base, 6 from apex of cell, 7 to 9 stalked, 10, 11 from the cell. Hind wing with 2 and 3 long-stalked close to angle of cell, 4 from the angle, 5 well developed from below the middle of the cross vein, 6, 7 from apex of cell, 8 absent. Palpi small, upturned to middle of front. Abdomen without tufts, not constricted. No ventral valve in the male. Antennæ not swollen, bipectinate in both sexes.

Zellatilla columbia, new species.

Black; thorax with slight, abdomen with shining blue reflection; a white band at base of third abdominal segment, narrowly broken dorsally; a sublateral row of white spots. Antennæ fulvous at tips. Wings orange-yellow, the termen broadly black; fore wing narrowly black at base, the orange part overspread with smoky blackish except just before its edges; black margin sinuous within. Margin of hind wing largely apical. Expanse, male, 40 mm.; female, 34 mm.

Types, Cat. No. 18804, U. S. Nat. Mus.; male, "Cuba" (collection of H. G. Dyar, through George Franck); female, Columbia, Isle of Pines, August 8, 1913 (H. D. Hill).

The specific name was suggested by Mr. Hill.

A NEW PHYCITID INJURIOUS TO PINE

(*Lepidoptera, Pyralidæ*)

By HARRISON G. DYAR

Pinipestis erythropasa, new species.

Fore wing with basal area broadly red-brown, smooth; inner line whitish, angled or irregular centrally, widest at costa and a little oblique outwardly below; median space, especially the area following the inner line, grayish white, with raised scales, not forming a distinct ridge; a red-brown band across median space, containing the quadrangular, upright, white discal spot in its outer edge; outer line whitish, in-angled subcostally, slightly denticulate, preceded by a red-brown line and followed by red-brown nearly to the margin; terminal line dark red-brown; fringe red-brown. Hind wing shaded with fuscous except between the veins; a double, dark terminal line; fringe with a little red-brown. Expanse, male, 21-24 mm.; female, 25 mm.

Cotypes, two males and two females, No. 18315, U. S. Nat. Mus.; bred from cones of *Pinus chihuahuana*, Chiricahua National Forest, Arizona (A. W. Zachau).

This species may be found to be more properly referable to the genus *Dioryctria*. This differs from *Pinipestis* only in the absence of the scale-ridge of fore wing. The ridge is not very apparent in the specimens, but they have all suffered some abrasion, and I thought the ridge might be apparent in fresh specimens.

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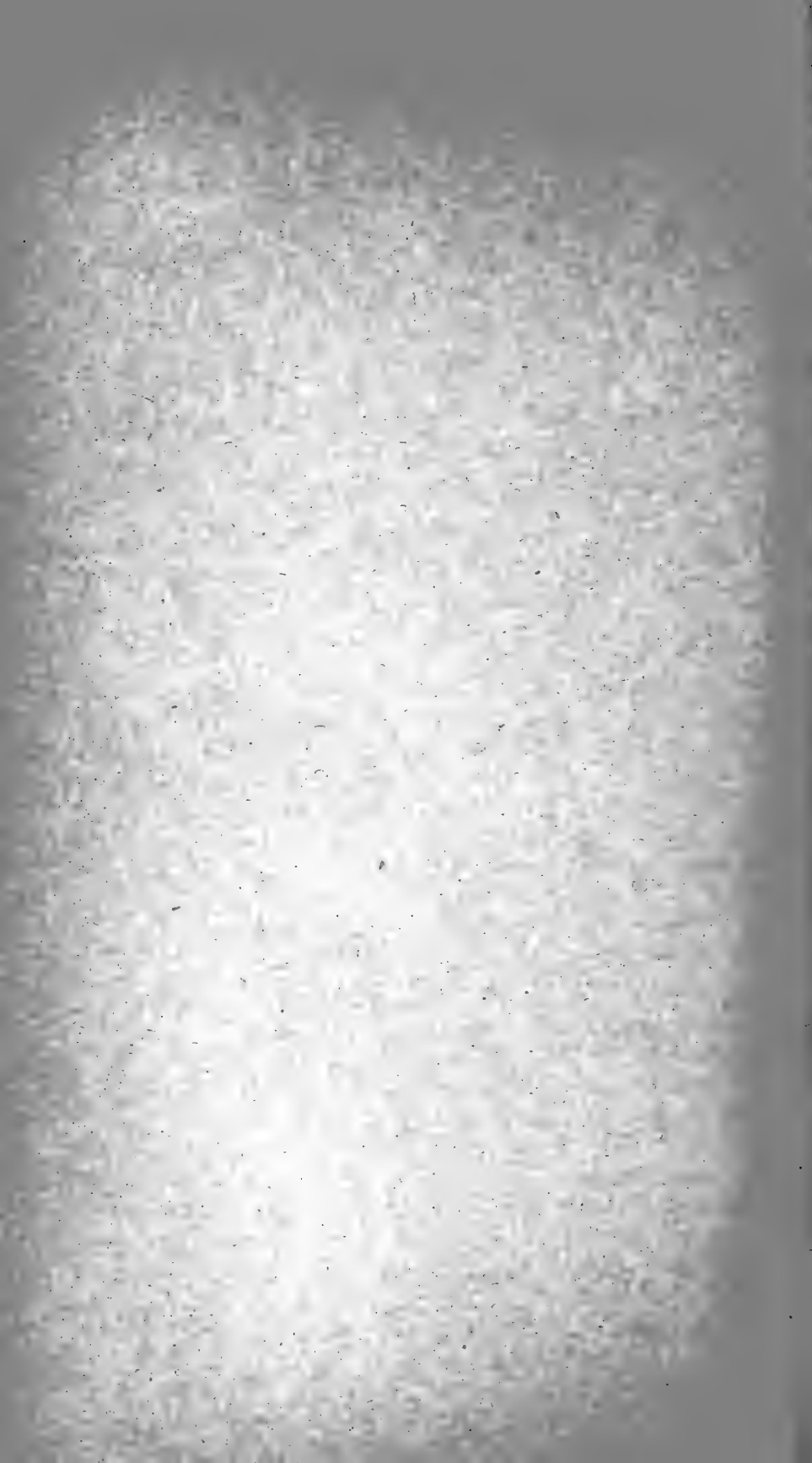
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THE LARVÆ OF SOME LEPIDOPTERA FROM MEXICO

By HARRISON G. DYAR

The following larvæ were communicated by Mr. W. Gugelmann, bred by him in Teapa, State of Tabasco, Mexico.

Family NYMPHALIDÆ

Amphirene epaphus Latreille.

Head large, subquadrate, notched at vertex, each lobe with a long, cylindrical process or horn, with hairs and a few thorns; head coal-black, horns dark red; some irregular black secondary hairs and a few thorn-shaped tubercles. Body cylindrical, tapering in front and with branched spinose processes; dorsal row on joints 5 to 13 rather small, red; subdorsal row on 3 to 12 yellow, with enlarged bases; lateral row on 3 to 14 red, slender; upper subventral row on 2 to 12 small, dull red; lower subventral row double and mixed with hairs, dull red, small. Body entirely black; joint 2 a little elevated and with scattered hairs; leg bases and thoracic feet hairy.

Timetes peleus Sulzer.

Head small, higher than wide, notched at vertex, each lobe with a long, slender, fleshy horn, about three times as long as the head, with small tubercles and minute setæ. Head yellowish white, the horns black; a narrow black stripe from each horn down the face to each side of clypeus; an elliptical black spot over the ocelli. Body cylindrical, tapered in front, smooth, annulate; three long, pointed, dorsal fleshy horns, with minute tubercles and setæ, on joints 6, 8, 10, and 12, longer than the diameter of the body. Color yellowish white with black patches, the horns black; on joint 2 a subdorsal quadrate patch and small lateral one;

on 3 and 4 small subdorsal spot and large angular lateral one, cut by the annulet incisures; at each horn, a large lateral patch, triangular above, cut obliquely into three stripes, of which the upper one runs forward onto the next segment, to its anterior edge laterally, the one running onto joint 5 with a duplicating spot above it; a row of subventral dashes on joints 3 to 13; a broken V-mark on the anal pilate. Thoracic feet black; abdominal ones with black spots outwardly, pubescent.

Food plant: *Ficus*.

Protopogonius cecrops Doubleday and Hewitson.

Head large, disk-shaped, gently convex in front, flat behind to a narrow neck; roughened with large tubercles dorsally; black, streaked vertically with yellow on the lower half; at vertex of each lobe, a black truncate horn, about twice as long as wide, roughened with tubercles; a smooth conical bright yellow tubercle below it; a group of five yellow tubercles on the side, with a black one in front, each with vertical hairs and several side ones; other smaller tubercles, the whole surface irregularly rugose and pitted. Body cylindrical, neck small, joints 3 to 7 regularly inflated; skin with minute yellow tubercles and secondary pile; a rather conspicuous row of them around the anal plate; skin light yellowish (green¹) with small red-brown blotches, especially subdorsally, most distinct on joints 3, 4, 6, 9 to 13, the terminal segments washed with black.

Family SYNTOMIDÆ

Episcepsis vinasia Schaus.

Head moderate, rounded, quadrate below, clypeus small; dull yellowish, a slight dark shade on vertices of lobes. Body cylindrical, a little flattened, uniform; whitish, with a more opaque and slightly pinkish subdorsal band; a series of black marks in dorsal space; cervical shield blackish, divided; a smoky quadrate patch on joint 3, becoming black anteriorly; a light red patch on joint 4; on 5 to 11 three dorsal spots on each segment and wart i also black, the spots largest and confluent on joint 5, somewhat enlarged also on joints 8 and 11; a single spot only on joints 12 to 14; sides and feet entirely pale. Warts i somewhat reduced, iv small; on the thorax, one wart only above the stigmatal wart. Hairs sparse, white, spinulose, longer laterally; a few longer black-

¹ Probably green when alive as in Sepp's figure, Surin. Vlind., plate 130.

ish ones at the extremities and a diffuse black pencil laterally on joint 5 (wart iii).

Food plant: *Zapotaceæ*.

The larva resembles that of *Lymire edwardsi* Grote.

Eucereon pseudarchias Hampson.

Head moderate, rounded, quadrate below; dark brown, shining, smooth, the median and clypeal sutures broadly white; sparsely covered with brown secondary hairs and some longer ones. The body is shrunken in the specimen, so the structure cannot be seen. The warts bear sparse, long, black hairs among dense tufts of short plumose brown ones, intermixed with white, forming a broad fan-shaped area anteriorly and a smaller similar area posteriorly, the whole triangularly shaped.

Food plant: *Ficus*.

Family ARCTIIDÆ

Utetheisa ornatrix Linnaeus.

Head small, rounded, flat in front, the clypeus reaching to the middle; shining cherry red. Body cylindrical, uniform; tubercles large, blue-black, single-haired except vi, which is double, iv close behind spiracle; color black, fading to grayish in the incisures; a yellow dorsal line, incised posteriorly and broken anteriorly on each segment; three subdorsal angular or quadrate yellow spots, the central one broken by tubercle ii; a stigmal yellow band, broken centrally on the segments, with angular patches and a small spot above tubercle iv; a row of small spots along tubercles vi; venter broadly pale yellow; feet black. Hairs long, coarse, i and ii black, iii to vi white, except the longest ones toward the extremities, which are black at base, white outwardly. Cervical shield black, bisected, each half with four hairs; a small two-haired wart posteriorly. On joints 3 and 4, ia + ib and iia approximated, in line.

Food plant: *Leguminosæ*.

Family LASIOCAMPIDÆ

Tolype synoecura Dyar.

Head rounded, flattened on top, clypeus depressed, dark, somewhat shining, the rest of the head soft velvety brown, dark-mottled, leaving a pale vertical streak on each lobe and an angled lateral line; densely hairy with soft brown hairs. Body cylindrical, uniform, joint 13 abruptly

narrowed; gray and brown, finely mottled, with a broad lateral paler stripe. Hair fine and dense, not concealing the body color, the secondary hair long and short, even except for a radial disturbance at the rather distinct warts i and vi, which bear longer hairs, all soft brown. On joint 2, rather distinct subdorsal and lateral warts. About one-third of the shorter secondary hairs are stiff and with black tips, evidently poisonous.

Mr. Gugelmann sent four of the communal nests, pendant from branches, each stuffed with the single cocoons. The nests vary greatly in size, evidently owing to the size of the larval colony, and also vary greatly in shape, which is less easy to account for, as they are freely pendant.

Food plant: *Terminalia buceras*.

Family NOTODONTIDÆ

Dicentria rustica Schaus.

Head elliptical, higher than joint 2, slightly notched at the vertex; brownish stone-color with a broad, straight, vertical band on each lobe, slightly darker, edged with black on each side, with a brown central line; with or without purple-brown mottlings on the sides and next to the vertical suture; setæ coarse, black, single. Body compressed; a dorsal horn on joint 5, bearing tubercles i; joint 8 slightly humped dorsally, joint 9 more so, joint 12 humped; tubercles i of joints 5, 8, 9, and 12 enlarged and reddish; sides of joints 2 to 4 green, lightly dotted with red; a lateral patch of purple-red mottlings on joint 2; a dorsal band of purple-brown, cut on joint 2 by a pale line and divided in the segmental incisures. Rest of the body light purplish, mottled with red-brown dots, lines, and reticulations; feet openly light, with marginal and cross lines of red-brown; a large dorsal whitish patch on joint 5 posteriorly to 8 anteriorly, widening posteriorly on each segment, openly lined with red, with a central brown dot in joint 7; a dorsal white line on joint 10 posteriorly, followed by subdorsal divergent white lines on joint 11 and a central white dot; dorsum of 11 to 13 narrowly brown, sides pale; lateral area of 5 to 11 obliquely barred in pale, the areas defined by heavier reticulations. Setæ coarse, black. Tubercles all small except as above indicated.

The larva is extremely similar to that of *Schizura ipomææ* Doubleday. It differs distinctly only in the shape of the white V-mark on joints 10-11.

Food plant: *Terminalia buceras*.

Family DALCERIDÆ

Paracraga argentea Schaus.

Elliptical, flattened, onisciform; abdominal feet wanting, venter membranous; thoracic feet minute; head incomplete above, retracted in joint 2; joint 2 forming a hood, lower than joint 3 and partly folded under it, but pigmented and with a large spiracle high up laterally. Other spiracles on joints 5 to 12 in line, in the edge of the membranous ventral area. Joint 2 yellow dorsally with purple-brown anterior line; joint 3 with a broad semilunate collar-like purple-brown band in front; dorsum of joints 3 to 12 yellow, with a subdorsal dark red band, joined at the ends and bent out a little at joints 4, 7, and 10, where a black superlateral spot cuts the edge of the yellow area. Sides colorless, presumably transparent. Appendages shrunken and undecipherable in the inflated specimen, apparently fleshy with black cores, three on joint 3, two on joint 2, one lateral one on joints 5 to 13.

Cocoon spun on the back of a leaf, a thin net of yellow silk, on top of which is an irregularly circular area of flesh-colored opaque silk, with a band of the same reaching to the anterior and posterior ends of the cocoon. These bands widen outwardly and cover, beneath the base of the widened part, a mass of silk stained dark brown.

Food plant: *Terminalia buceras*.

NEW GALL MIDGES (ITONIDIDÆ)

By E. P. FELT, Albany, N. Y.

This paper characterizes a new species of *Tritozyga*, an American genus known for nearly half a century only by a brief generic diagnosis and represented during this time only by a unique and mutilated male. *Konisomyia* is an exceedingly interesting synthetic form. The other species described in this paper were reared and are therefore accompanied by valuable biological data.

Tritozyga fenestra, new species.

One specimen of this peculiar female was taken on the office window June 3 and another June 6, 1914. Nothing is known concerning its life history and habits.

Female: Length, 1.1 mm. Antennæ very short, dark brown; eight segments, the second somewhat enlarged, subglobose, the others sessile, subcylindric, the fifth with a length one-fourth greater than its diameter and near the middle a sparse whorl of long, stout, simple setæ; terminal segment with a length two to two and one-half times its diameter, evidently composed of two or three closely fused units and tapering to a narrowly rounded apex. Palpi: First segment irregular, the second with a length about two and one-half times its diameter, the third as long as the second, more slender, the fourth one-third longer than the second, greatly dilated. Mesonotum dark brown, almost black. Scutellum and postscutellum shining dark brown. Abdomen dark brown. Wings hyaline, subcosta uniting with the anterior margin just beyond the basal half, the third vein at the distal fourth, the fourth vein rudimentary, forked, posterior branch a nearly straight continuation, the anterior strongly curved, S-shaped; fifth vein simple, uniting with the posterior margin at the distal fifth, the sixth at the basal third. Halteres fuscous yellowish basally, fuscous apically. Coxæ and femora fuscous yellowish, tibiæ and tarsi dark brown; claws slender, evenly curved, minutely denticulate basally, the pulvilli nearly as long as the claws. Ovipositor short, terminal lobes triarticulate, the distal segment roundly ovate and rather thickly setose. Type Cecid 1557.

Konisomyia, new genus.

The unique form described below has the general appearance of *Campylomyza*, though the forked rudimentary fourth vein compels its reference to the *Lestreminariæ*. It is easily recognized by the large, rounded wings, the absence of a cross vein, and the proximity of the third vein to the basal portion of subcosta. The type is *K. fusca*, new species.

Konisomyia fusca, new species.

This remarkable fly was taken in the office June 2, 1914, nothing being known concerning its habits or life history. The most striking peculiarities have been outlined in the generic diagnosis.

Female: Length, 2 mm. Antennæ hardly extending to the base of the abdomen, sparsely haired, dark brown; eight segments, the second globose, slightly enlarged, the fifth sessile, subcylindric, with a length about equal to its diameter; subbasally there is a sparse whorl of stout setæ and near the middle a scattering whorl of finer hairs; terminal segment compound, evidently composed of three segments and with a length

approximately four times its diameter. Palpi: First segment irregular, the second narrowly oval, the third a little longer than the second, more slender, the fourth about one-third longer than the second, greatly dilated. Eyes black, coarsely granulate, narrowly approximate at the vertex; ocelli apparently present, three in number. Mesonotum shining brownish black. Scutellum and postscutellum dark brown. Abdomen fuscous orange, the dorsal sclerites of segments 1 to 5 reddish brown, the others a little darker; venter yellowish salmon. Wings hyaline. Costa pale straw, subcosta and the third vein approximate basally, the former uniting with the anterior margin near the middle, the latter at the distal ninth; cross vein wanting; the fourth vein obsolescent, forked; the fifth vein simple, slightly curved, joining the posterior margin at the distal fourth, the sixth strongly curved near the middle. Halteres yellowish basally, slaty brown apically. Coxæ fuscous yellowish, the legs a nearly uniform fuscous straw; claws simple, strongly curved, the pulvilli a little longer than the claws. Ovipositor short, stout, the lobes triarticulate, the terminal segment broadly oval and thickly setose. Type C. 1555.

***Lasioptera tibialis*, new species.**

The unusually small midges were reared April 24, 1914, from a stem or branch gall on *Pentstemon antirrhinoides*? collected by Mr. E. P. Van Duzee near La Jolia, California. The species runs in our key to near *L. allioniae* Felt, from which it is easily separated by its smaller size, more hairy wings, the reddish brown scutellum, and the peculiar markings of the tibiae. A specimen of the beautiful little *Urellia mevarna* Walk., probably an inquiline, was also reared from this gall.

Gall: Length, 1.5 cm.; diameter, 4 to 5 mm., unicellular, rather hard. This is a subcylindric enlargement of the stem or branch and is traversed by a simple median gallery. The coloring of the deformity varies from a reddish brown to greenish and is not very different from that of the normal stem.

Larva: Length, 3 mm., rather slender, tapering at both extremities, yellowish orange, the breastbone long, bidentate, and with the lateral angles of the anterior portion expanded.

Male: Length, 1 mm. Antennæ short, sparsely haired, dark brown; 16 segments, the fifth with a length one-fourth greater than its diameter; terminal segment suboval or subglobose. Palpi: First and second segments short, irregular, the third nearly twice the length of the second,

narrowly oval, the fourth one-half longer than the third, slender. Mesonotum dark brown, the submedian lines narrowly white-scaled. Scutellum reddish brown, postscutellum darker. Abdomen mostly dark brown, the basal segment with silvery scales, the others with rudimentary posterior lines of whitish scales and irregularly rectangular lateral patches of the same. Genitalia fuscous yellowish, sparsely white-haired; venter yellowish, sparsely clothed with dull silvery scales. Wings hyaline, with unusually long, thick branches; costa dark brown, a small white spot near the basal third. Halteres fuscous basally, whitish apically. Coxæ and legs mostly dark reddish brown, the tibiæ narrowly annulate with white. The pulvilli nearly as long as the rather heavy, unidentate claws. Genitalia: Basal clasp segment moderately long; terminal clasp segment short, stout; dorsal plate deeply and triangularly emarginate, the lobes tapering to a narrowly rounded apex; ventral plate tapering, broadly and very slightly emarginate, almost truncate. Harpes long, slender, minutely denticulate apically.

Female: Length, 1.25 mm. Antennæ dark brown; 19 segments, the fifth with a length three-fourths its diameter, the terminal segment subglobose. Palpi nearly as in the male, except that the third and fourth segments are relatively stouter and the fourth somewhat shorter. Mesonotum dark reddish brown, the submedian lines sparsely white-haired. Scutellum reddish brown, white-scaled apically, postscutellum darker. Abdomen dark brown, the basal segment, small submedian and narrowly triangular lateral spots, white. Ovipositor yellowish; venter suffused with whitish scales. Coxæ dark brown, femora suffused with whitish scales basally, yellowish brown apically; tibia dark brown with a narrow, white annulation basally, a broken, broad one just before the middle and a narrower one apically; tarsi a nearly uniform dark brown, the ventral surface suffused with white scales. Pulvilli as long as the unidentate claws. Ovipositor as long as the body, basally with submedian oval patches of broad scales, subapically with submedian groups of about eight moderately slender, chitinous hooks; terminal lobes narrowly oval, thickly setose. Type C. a2505.

The peculiar markings of the tibiæ in the female appear to be characteristic though somewhat variable.

Lobopteromyia venæ, new species.

Greenish, pouch-like vein galls are locally very abundant upon certain thorn bushes, *Cratægus* species at Nassau and have been recorded from

Massachusetts by Miss Stebbins.¹ The female provisionally referred to the above-named genus was reared May 31, 1907. A species of *Dicrodiplosis*, *D. venitalis*, has also been obtained from this gall and it is impossible, with the present data, to decide which species is the maker of the gall.

Egg: Length, 0.15 mm. Elongate, narrowly oval, pale reddish yellow.

Gall: Length, 1.5 cm. Greenish white, hollow, pouch-like vein swelling the size of a buckshot and on the underside of *Cratægus* leaves.

Larva: Length, 2.5 mm. Stout, yellowish orange. Head rather broad. Antennæ apparently uniarticulate, short, stout, tapering; breast-bone well developed, expanded anteriorly, bidentate, the shaft semitransparent. Skin under high power minutely and longitudinally striate. Terminal segment irregularly lobed and rounded. Possibly the larva of *Dicrodiplosis venitalis*.

Female: Length, 2 mm. Antennæ extending to the fifth abdominal segment, sparsely haired, fuscous yellowish; 14 segments, the fifth with the stem one-fifth the length of the subcylindric basal enlargement, which latter has a length about two and one-half times its diameter and sparse whorls of long, stout setæ basally and subapically; terminal segment somewhat produced, with a length two and one-half to three times its diameter. Palpi: First and second segments short, stout, the third nearly twice the length of the second, the fourth one-half longer than the third, dilated. Face fuscous yellowish. Mesonotum dark brown, the submedian lines and the posterior median area fuscous yellowish. Scutellum light fuscous yellowish, postscutellum dark brown. Abdomen light reddish brown. Genitalia yellowish. Wings hyaline. Halteres yellowish basally, slightly fuscous subapically. Legs a nearly uniform light fuscous yellowish; claws long, stout, strongly curved, simple, the pulvilli as long as the claws. Ovipositor short, stout, hardly one-fifth the length of the abdomen; terminal lobes short, stout, broadly rounded and sparsely setose. Type C. a 128a.

***Dicrodiplosis venitalis*, new species.**

The female provisionally referred to the above-named genus was reared September 9, 1907, from a jar containing tumid vein galls on *Cratægus*. It is impossible to state, with the data at hand, whether this species or

¹ Stebbins, F. A. *Stringf. Mus. Nat. Hist.*, Bul. 1, p. 39, 1910.

Lobopteromyia venitalis is the true producer. The larva described as that of the last-named species may belong to this form. The gall is locally very abundant at Nassau.

Gall: Length, 1.5 cm. Greenish white, hollow, pouch-like vein swelling the size of a buckshot and on the underside of *Cratægus* leaves.

Female: Length, 2 mm. Antennæ nearly as long as the body, sparsely haired, probably light brown; 14 segments, the fifth with a stem three-fourths the length of the cylindric basal enlargement, which latter has a length thrice its diameter and sparse basal and subapical whorls of long, stout setæ; terminal segment slightly produced, the basal enlargement with a length over three times its diameter and apically a stout, setose, fingerlike process. Palpi: First segment short, irregular, the second with a length four times its diameter, the third a little longer than the second, the fourth one-half longer than the third. Mesonotum probably dark brown, the submedian lines yellowish. Scutellum and postscutellum probably yellowish, the abdomen presumably a light fuscous yellowish. Wings hyaline. Halteres, coxæ, and legs pale straw; claws slender, strongly curved, unidentate, the pulvilli rudimentary. Ovipositor nearly one-half the length of the abdomen, the terminal lobes narrowly fusiform, with a length over three times the diameter and sparsely setose. Type Cecid a 1128.

Diadiplosis buscki, new species.

The species described below was assembled under a lot labeled "*Diplosis coccidarum* Ckll., Porto Rico, August Busck, 339.⁰¹¹" and evidently had been reared from some scale insect. This species is quite different from *D. cocci* Felt.

Male: Length, 1.5 mm. Antennæ probably longer than the body, sparsely haired, light brown; 14 segments, the fifth having the stems with a length one-third and one-half their diameters, respectively, the distal enlargement one-fourth greater than its diameter, and a distinct constriction at the basal third; circumfili short, heavy, each filum having approximately 15 loops. Palpi: First segment short, irregular, the second with a length three times its diameter, the third a little longer, the second more slender. Mesonotum reddish brown. Scutellum a little lighter, postscutellum yellowish. Abdomen dark brown, a variable yellowish basally and apically. Halteres yellowish basally, fuscous apically. Wings hyaline. Legs a variable fuscous straw, the tarsi darker. Claws

strongly curved, slender, unidentate, the pulvilli rudimentary. Genitalia: Basal clasp segment moderately long, stout; terminal clasp segment short, stout, tapering; dorsal plate short, broad, deeply and roundly emarginate, the lobes narrowly rounded; ventral plate long, deeply and roundly emarginate, the divergent lobes narrowly rounded, setose. Harpes fused mesially, the ventral margin feebly and irregularly serrate.

Female: Length, 1.5 mm. Very nearly as in the male so far as may be determined by badly broken specimens. The second palpal segment has a length nearly three times its diameter and the third is a little longer and more slender than the second. Ovipositor short, the terminal lobes narrowly lanceolate and sparsely setose. Type Cecid 1529a.

NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

(Continued from page 96)

Eusignosoma, new genus.

Differs from *Signosomopsis* as follows: Description drawn from both sexes. Abdomen much rounded, still more narrowed apically, not at all emarginate in either sex. Length of anal segment on median line varies from conspicuously less than combined length of first to third segments on same line, the second and third segments being in such case much longer than in *Signosoma* and *Signosomopsis*, to about equal that of the first three segments. Pollinose marking of anal segment when present and its corresponding space when absent with from one to three or more pairs of macrochaetae, the pollen when present reaching sides of segment or not. Hind margin of first and second segments wavy in middle in both sexes, sometimes that of second segment in male not so, that of third segment in female at best faintly so. Second and third segments with single sparse marginal row of macrochaetae, that of second segment usually interrupted on each side of middle but sometimes entire, both usually with only one but sometimes two pairs of median discal macrochaetae, and with rather strong thickly placed lateral discal bristles or only short bristly hairs. Abdominal macrochaetae not so spinelike; no spines on venter but only bristles and bristly hairs on median line. Scutellum with weak but distinctly spinelike macrochaetae, discal and marginal; the erect posterior

median pair approximated and heavier, a bristle between them, usually no distinct pair of bristles behind them but sometimes a weak pair. Three sternopleural, three postsutural, three postacrostichal, and two preacrostichal bristles, but sometimes only one acrostichal both before and behind suture.

Proboscis a little shorter. Palpi microscopically tubercular, or represented only by minute bristlets. Third antennal joint one and one-eighth to one and one-half times as long as second. Male front at vertex about equal to eye-width or slightly narrower, that of female about one and one-third times eye-width.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Eusignosoma aureum*, new species.

***Eusignosoma aureum*, new species.**

Length of body, 8.5 (male) to 10.5 mm. (female); of wing, 8 to 10 mm. Two males and one female, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 15, 1910, on flowers of *Baccharis* sp.

Head pale golden pollinose, the parafrontals dusky with same pollen; frontalia light reddish-brown. First two antennal joints reddish, being about same shade as frontalia or slightly deeper; third joint brown to blackish, arista black. Male front at vertex equal to eye-width. Occipital and parafacial pile pale brassy, parafrontal pile black. Base and inner or lower edge of third antennal joint is more or less reddish, broadly so in female. Thorax dark, thickly pale brassy pollinose, leaving same vittae as in *Signosomopsis argentea*. Scutellum and abdomen wholly black except the deep golden pollinose marking of anal segment. Venter wholly blackish. Scutellum and venter rather shining, the tergum nearly opaque. Disk of scutellum with irregular weak spinelike macrochaetae. First abdominal segment with macrochaetae only at sides. First three segments with rather long thickly placed bristles on sides which graduate into the shorter thick black pile of disk. Golden pollinose marking of anal segment not reaching sides of segment, with median posterior pointed tongue, one or two pairs of macrochaetae in its disk or nearer to its posterior edge. Anal segment as long as other segments together measured on median line. Legs very light reddish or rust-yellowish; the anterior and middle tarsi but slightly paler in male, concolorous in female. Front tarsi of female slightly widened. Wings evenly infuscated, bases narrowly smoky-yellowish; hind tegulae deeply infuscate, front tegulae smoky-

yellow like wing bases. Two preacrostichal and three postacrostichal bristles.

Type, TD3951 (fly, dissection of uterus, and slide of colored maggots). The maggots are much shortened. The uterus is straplike.

Eusignosoma aureolatum, new species.

Length of body, 8.5 to 8.75 mm. (female), the abdomen being arched ; of wing, same measurement. Three females, montaña of San Gaban Canyon ; one, Casahuiri, about 4,500 feet, February 4, 1910, on flowers of *Mikania* sp. ; the other two, Uruhuasi Bridge, about 6,500 feet, February 15, 1910, on flowers of *Baccharis* sp.

Differs from *E. aureum* as follows : Head and thorax slightly more deeply golden pollinose, the pollen of thorax in one specimen only a shade less golden than marking of anal segment. Scutellum with same pollen as thorax. Anal segment measured on median line conspicuously shorter than other segments combined. Deep golden spot of anal segment reaching sides of segment near hind border and reaching front border of segment only in the middle, including in its area four to six pairs of bristles with their black punctate origins. No long bristles on sides of first three abdominal segments, but instead only the thick black pile which is hardly longer than that of disk. Wings a little more noticeably yellow at base, not so deeply infuscate, lighter on apical and inner area. Tegulae both deep smoky-yellow, the hind scale slightly darker. Tarsi concolorous with rest of legs. Third antennal joint lighter in color.

Type, Casahuiri (more deeply golden specimen).

Eusignosoma nigrum, new species.

Length of body, 8.5 mm. ; of wing, 9 mm. Two males, Uruhuasi Bridge, about 6,500 feet, February 3 and 15, 1910, on flowers of *Baccharis* sp.

Head and thorax wholly deep golden, frontalia light brown ; first two antennal joints reddish, third brown with some reddish at base, arista black. Occipital to parafacial pile golden. Four faint narrow thoracic vittae of usual interrupted pattern. Scutellum and abdomen wholly soft subshining black, including venter, the first three segments faintly reddish on sides. Anal segment shorter than other segments combined. No marking of anal segment. Legs wholly deep rust-yellowish or reddish-yellow. Wings evenly infuscate, but with the basal yellow filling in the costal and basal cells. Both scales of tegulae deep smoky-blackish, more

deeply infusate than wings. Erect weakly spinelike macrochaetae on disk of scutellum. Abdomen rather thickly bristly on sides anteriorly, and anal segment well bristled. Only one preacrostichal and one postacrostichal bristles. Male front at vertex a little less than eye-width.

The above three genera, *Signosoma*, *Signosomopsis*, and *Eusignosoma*, are small South American forms representing in the Andean region the *signifera* colorational-type, which is that with the sign-mark on anal segment. They are characterized by a peculiar conformation of the tergum of abdomen whereby the intermediate segments are pushed forward in middle and the anal segment is much extended forward on median portion, its front border being thus highly arcuate. This has apparently resulted from the necessity of enlarging the dorsal surface of anal segment so as to increase the size of the sign-mark, whose development appears to be practically confined thereto.

Uruhuasia, new genus.

Differs from *Eusignosoma* as follows: Described from male only. Abdomen not so rounded, more elongate and narrowed, being but little wider than the thorax, narrowed apically and not emarginate. Length of anal segment not over one and one-fourth times that of third segment. No conspicuous marking on anal segment, but a faint pollinose pattern on both third and anal segments after the plan of the pollen of anal segment in *Eusignosoma nigrum*, with second segment also faintly pollinose in oblique view. Macrochaetae of anal segment covering the posterior half of its dorsal surface and practically all of its ventral surface. Scutellum with only ordinary macrochaetae, absolutely lacking spinelike macrochaetae; two long lateral marginal pairs, one very weak apical decussate pair, disk with several pairs of weak bristles irregularly disposed. Three sternopleural bristles, three postsutural, one postacrostichal, and one preacrostichal. Second abdominal segment with two median discal pairs of macrochaetae, one pair in front of the other; two or three lateral discal on each side, and a marginal row. Abdominal macrochaetae not spine-like, ventral plates with only bristly hairs.

Palpal bristlets present. Third antennal joint one and one-half times as long as the moderately elongate second joint. Second arisal joint moderately elongate, the arista subgeniculate. Male front at vertex rather more than eye-width. Male cheeks fully two-thirds eye-height. Claws distinctly longer than last tarsal joint.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Uruhuasia cruciata*, new species.

This genus may be allied to *Gymnomma*. It differs from Brauer and von Bergenstamm's brief description of *G. nitidiventris* in having discal macrochaetae. Its other points of difference may be found in the description.

***Uruhuasia cruciata*, new species.**

Length of body, 9 mm.; of wing, 8.5 mm. One male, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 3, 1910, on flowers of *Baccharis* sp.

Head deep bright golden throughout, the parafrontals only slightly darkened, the frontalia and first two antennal joints deep rust-yellow; third antennal joint and arista black except that base of former is tinged with the rust-yellow. All the pile of head except the frontal hairs is of the same bright gold shade. Thorax and scutellum black but covered with an olive-gold pollen producing nearly same shade of color as that of parafrontals; the scutellum only thinly pollinose on apex where it appears more blackish. Four narrow thoracic vittae. Abdomen wholly soft black, slightly reddish on sides of first two segments; a very thin silvery pollen covering the dorsum of second to anal segments, that of third and anal segments more noticeable and occupying the front half or so of segment except on median line, thus leaving a soft black cross formed by the broad median line and the posterior half of third segment. The silvery nearly reaches hind margin of anal segment at sides. Legs wholly deep rust-yellow, the front femora golden pollinose. Wings lightly infuscate, the basocostal area broadly bright rust-yellow and the front scale of tegulae same color; hind scale of tegulae smoky like wings, except the narrow margin and extreme base rust-yellow.

This species approaches the coloration and habitus of *Eusignosoma nigrum*.

Subgenus A.—Characters already given above for *U. cruciata* T., which is type.

Subgenus B.—Differs as follows, description being of male: Macrochaetae of anal abdominal segment covering more than posterior half of dorsum. Scutellum with two lateral marginal macrochaetae of ordinary form; apical pair of weak divaricate bristles, almost hairlike; submarginal row of slender but straight subspinelike macrochaetae, the outer one being

about as long as the lateral pairs; and a transverse discal row. Second abdominal segment in middle with four short macrochaetae in transverse discal row near front margin. Third antennal joint not so widened, only slightly longer than second. Male front at vertex rather narrower than eye-width. Claws a little longer, distinctly longer than last tarsal joint. Scutellar macrochaetae appear to be very similar to those of *Eusignosoma nigrum* T. Type, *Uruhuasia delta*, new species.

***Uruhuasia delta*, new species.**

Length of body, 9.5 mm.; of wing, 9 mm. One male, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 3, 1910, on flowers of *Baccharis* sp.

Differs in coloration from *Uruhuasia cruciata* only as follows: Third antennal joint light brown, more suffused with the rust-yellow. Thoracic vittae quite linear. Scutellum more thickly gold pollinose, quite covering apex. The faint silvery of third and anal abdominal segments is in form of broad front border to segments narrowed in middle but running back on median line almost to posterior margin in a wedge-shaped pointed tongue. This leaves the black running forward in two anteriorly-pointed wedges on each segment. Front femora not so fully golden pollinose. Both scales of tegulae bright rust-yellow like the wing-bases.

Approaches habitus and coloration of *Eusignosoma nigrum* and *Uruhuasia cruciata*.

(To be continued.)

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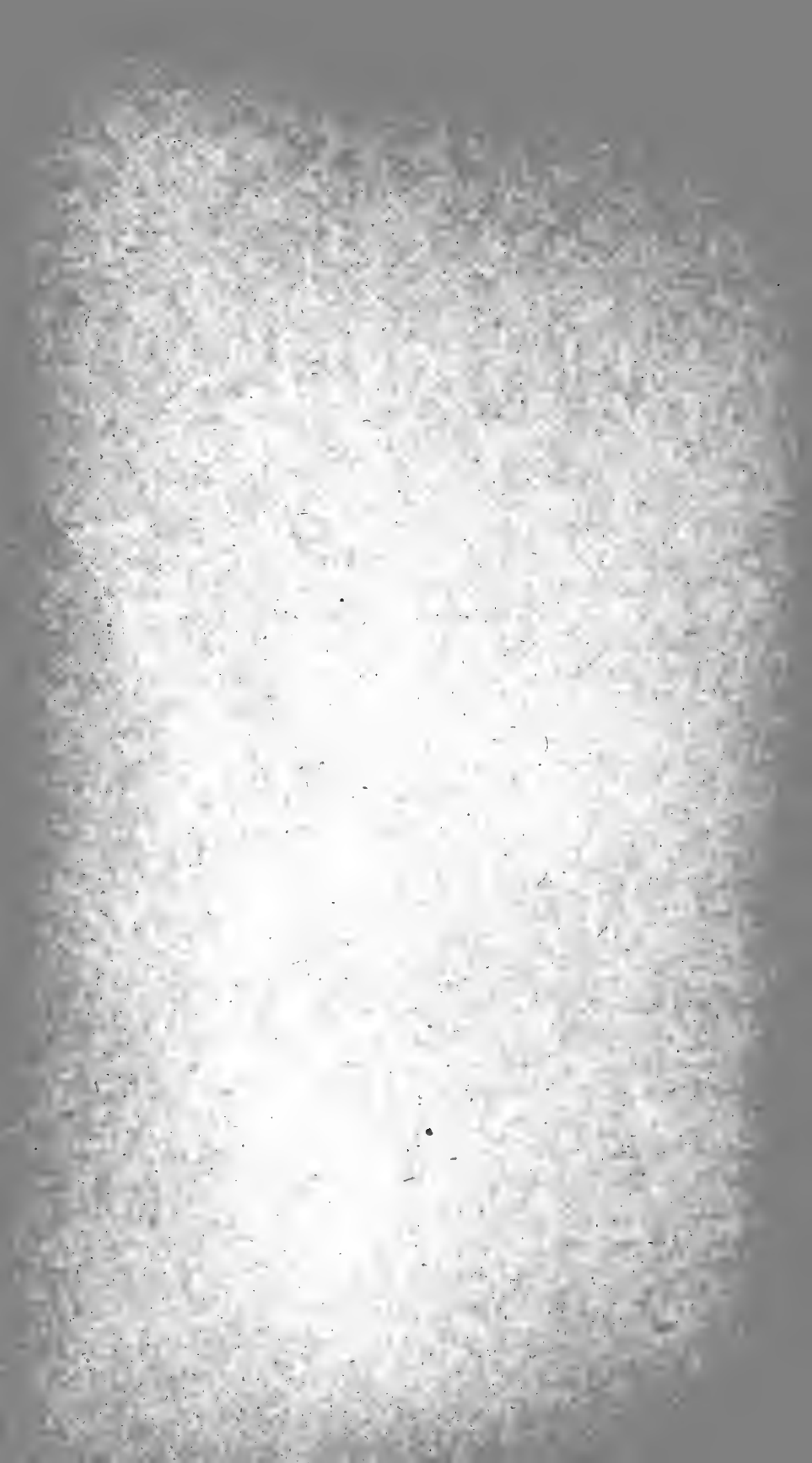
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UTETHEISA IN PORTO RICO

(*Lepidoptera, Arctiidae*)

By HARRISON G. DYAR

Neither Butler (1877) nor Hampson (1901), both of whom treat the species fully, record any specimens of *Utetheisa* from Porto Rico. A form, however, is not uncommon, or possibly two forms, and I possess good series of adults and larvæ, through the kindness of Mr. Thos. H. Jones and his associates. It was figured by Stretch (Zyg. & Bomb. N. A., pl. ii, fig. 17, 1872) without name. Subsequently the name *stretchii* was applied by Butler to Stretch's figure (Trans. Ent. Soc. Lond., 1877, 361), but he added the erroneous locality, Honduras. The relation of this form to the other recognized species is somewhat peculiar.

The latest authority recognizes but two American species. Of these *ornatrix* Linn. is distinguished by the white hind wings, and ranges from Brazil to Mexico, including the Lesser Antilles, the Galapagos and Marquesas Islands. It reaches southern Texas, as I have a specimen before me from Bastrop County (collection O. Meske). In this connection, the occurrence in the Lesser Antilles is of importance. Hampson cites Antigua, St. Kitts, Nevis, St. Lucia, and Barbados, to which I can add Grenada, Dominica, and Martinique. The species is very constant, being subject to only two variations, one, an increase in the red markings on the wing, sometimes amounting to an almost complete suffusion, the other a partial restoration of the lines of black dots across the wing, accompanied by some red.

The first variety may be named variety **daphoena**, new variety. The type is a male from Jalapa, Mexico (Schaus collection). The black dots are normal, but the fore wing is shaded with crimson, in broken bands outwardly, along median vein and inner area. The discal venules remain white, and white areas surround all the black dots.

The second variety may be named variety **butleri**, new name. The types are male and female from Honduras (Blancaneaux) in the British Museum, and are described by Hampson under the misapplied name *stretchii* Butler (Cat. Lep. Phal., iii, 486, 1901). I possess a specimen from Bastrop County, Texas, which agrees nearly with Hampson's description but I am not certain whether the form is really a variety of *ornatrix* or not. More material and larvæ should be at hand.

The species *bella* is considered to have two forms, one with orange markings on fore wing (*bella* Linn.), the other with crimson markings (*venusta* Dalman). Both have red hind wings. The *bella* form occurs on the mainland of North America from Massachusetts to Texas. Hampson records a specimen from Yucatan; but I have nothing from below Texas. The *venusta* form is rare, but occasionally occurs. I have a specimen from Kansas and Mr. F. Knab tells me that he took it occasionally at Chicopee, Massachusetts, where *bella* was very common. It occurs as the extreme variation in the darkening of the yellow color. In the Greater Antilles, *venusta* predominates. In Jamaica, *bella* seems not to occur; but in Cuba, occasional specimens of fairly typical *bella* may be found.

Concerning the larvæ, there is a marked difference. *Ornatrix* larvæ (Tabasco, Mexico) are black with broken yellow lines and dots (Ins. Ins. Men., ii, 115, 1914). *Bella* larva is orange with transverse black segmental bands. In continental *bella* (New York, Florida) the bands are more or less diffused and incomplete, being supplemented by dots before and behind dorsally, broken off into scattered markings laterally. In the insular *venusta* (Jamaica), the bands are neat and distinct, running down to the feet and without supplemental markings.

To return now to the Porto Rican form *stretchii* Butler. It has white hind wings, quite typical of *ornatrix*. The fore wings are of two patterns. Somewhat over half of my specimens have the crimson bands and black dots typical of *venusta* (*stretchii*). In others the dots are reduced to the condition of *ornatrix*, while the red is reduced fully as much as in *ornatrix* from the Lesser Antilles, or suffuses the wing. From the adult, *stretchii* would be unhesitatingly classified as a variety of *ornatrix*, as has been done; but the larvæ tell another story. The specimens received from Mr. Jones, collected at Youco, Porto Rico, June 30, 1914, on *Crotalaria*, are the orange, fully banded, typical *venusta* form as occurring in Jamaica. These larvæ have not been bred, but evidently must

belong to *stretchii*, as *venusta* is not known in Porto Rico. In regard to the specimens cited above as having lost the black dots and bands and become indistinguishable from *ornatrix*, it is possible that they are that species, and that two species occur in Porto Rico, *ornatrix* by way of the Lesser Antilles, from continental South America, *stretchii* as an offshoot of *venusta* of the Greater Antilles, more remotely from *bella* of continental North America. The breeding of the two forms by local workers will decide.

THE ORIENTAL TRIGONOMETOPINE FLIES

(*Diptera, Lauxantidae*)

By FREDERICK KNAB

Until recent years species of *Trigonometopus* were known only from Europe and America. Prof. Hendel, in 1909, was the first to describe a species from the Oriental region—*Trigonometopus monochæta* from Formosa.¹ Since then four other species have been described, *brevicornis* de Meijere from Java,² *trilineatus* Brunetti from Assam,³ *albiseta* Bezzi and *bakeri* Bezzi from the Philippines.⁴ An additional species from the island of Guam is characterized herein.

The species described by Hendel and Brunetti differ from typical *Trigonometopus* in a number of striking characters and may be segregated as follows:

Diplochasma, new genus.

Closely related to *Trigonometopus* and differing from it as follows: Only one pair of fronto-orbital bristles; postvertical bristles wanting. Face but moderately receding in profile, the clypeus strongly projecting and extending upward on the face to base of antennæ, sinuate in outline when seen in profile.

Type, *Trigonometopus monochæta* Hendel.

Brunetti's *Trigonometopus trilineatus* is congeneric, closely resembles *monochæta*, and may be a synonym of it. The only tangible difference

¹Wien. Ent. Zeit., vol. 28, p. 85, 1909.

²Tijdschr. v. Ent., vol. 54, p. 352, 1911.

³Records Indian Mus., vol. 8, p. 175; pl. 6, fig. 11, 1913.

⁴Phil. Journ. Sci., ser. D, vol. 8, pp. 317, 318, 1914.

apparent from the descriptions is a pair of dark spots on the frons near the ocellar triangle, present in *monochæta* and absent in *trilineatus*. With the otherwise close agreement, too much value can not be conceded to this difference.

Trigonometopus Macquart.

As here restricted, this genus includes those species which have the face flattened and strongly receding, the mouth on the ventral aspect, the clypeus not produced toward the antennæ; two pairs of fronto-orbital bristles, postvertical bristles present. The following table will serve to separate the species of the Oriental region.

- | | | | | | |
|---|---|---|---|----------------------------|---|
| 1. Mesonotum pale, with four brown longitudinal stripes | . | . | . | . | 2 |
| Mesonotum pale, with a pair of broad lateral stripes | . | . | . | <i>setosus</i> , n. sp. | |
| 2. Wings with brown costal shade | . | . | . | . | 3 |
| Wings yellowish, without costal shade | . | . | . | <i>brevicornis</i> Meijere | |
| 3. Costal brown shade beginning at base of wing | . | . | . | <i>bakeri</i> Bezzi | |
| Costal shade beginning at tip of auxiliary vein | . | . | . | <i>albisetæ</i> Bezzi | |

Trigonometopus setosus, new species.

Female: Head rather short, the face flat and receding, the clypeus forming a prominent rim around the ventrally situated mouth. Eyes rounded, broadest anteriorly. Frons broad, slightly wider than one eye, nearly parallel-sided, narrowed and only slightly produced beyond the eyes; two pairs of very large fronto-orbital bristles, postverticals long and cruciate. Antennæ prominent, blackish, a whitish spot on inner side involving second joint and base of third; third joint rounded, compressed, pubescent; arista long, black, setose. Frons pale yellowish with whitish pruinosity, the ocellar callosity black, a pair of large triangular spots anteriorly from eyes to antennæ; a pair of large black spots above behind eyes; face and entire lower part of head pale yellowish; palpi slender, ferruginous yellow at tip, with a few black setæ. Mesonotum with a broad yellowish, slightly pruinose, median stripe and brownish black lateral stripes, these latter extending to dorsocentrals and occupying almost one-third the width of thorax. Scutellum concolorous with median stripe of mesonotum, the sides from base to apical third blackish in continuation of lateral mesonotal stripes. Pleuræ pale yellowish. Three pairs of very long dorsocentral and two pairs of scutellar bristles. Bristles and hairs of head and thorax black, the macrochætæ very long and coarse. Abdomen dorsally blackish, with trace of a median reddish brown stripe on

basal half; venter paler. Legs pale yellowish, with black setulæ and bristles, the anterior and median tarsi distally somewhat infuscated. Wings wholly clear, with a slight yellowish tint; veins yellowish brown; anterior cross vein about at middle of discal cell, last section of fourth vein twice as long as preceding section and without stump. Halteres white.

Length: Body about 2.7 mm.; wing 3 mm.

Guam Island (D. T. Fulloway), three specimens.

Type, Cat. No. 18809, U. S. Nat. Mus.

NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

(Continued from page 128)

Parepalpus Coquillett.

The following description is given of the generic characters of a single specimen which I refer to this genus.

General external characters of *Gymnomma*. Description is from male only. Front of male at vertex rather more than eye-width; cheeks nearly two-thirds eye-height. Proboscis about one and one-third times head-height, the geniculation being about in middle. Palpal bristlets present. Third antennal joint about one and one-half times as long as the elongate second. Second arisal joint about three times as long as wide. No ocellar bristles. There is an inwardly curved bristle close to orbit, outside of fourth bristle of frontal row counting backward, which evidently represents a doubling of frontals rather than a true orbital bristle.

Three sternopleural bristles; three strong postsutural bristles, with an extra or supernumerary weaker one just in front of the anterior strong one; three strong postacrostichal and two preacrostichal bristles. Scutellum with straight spinelike macrochaetae in a marginal and a transverse discal row, all short except a long separated median pair in marginal row; two long strong lateral marginal pairs of ordinary macrochaetae, no apical pair. Abdomen a little wider than thorax, oval, arched or subglobose-convex above; second segment with a strong median discal pair of macrochaetae, a stronger median marginal pair, several very weak pairs between these on median line, and two or three marginal at sides; third segment with one median discal pair, and a marginal row; anal segment sparsely

covered with macrochaetae except wide front border. Abdominal macrochaetae not truly spinelike, but curved; ventral plates with bunches of bristles only. Male claws not greatly elongate, only about as long as last tarsal joint. Apical cell widely open. Anal abdominal segment about one and one-third times as long as the third segment.

Reproductive habit, probably leaf-larviposition of colored maggots.

This form is more or less intermediate between *Uruhuasiopsis* and *Saundersiops*.

Parepalpus similis, new species.

Length of body, 9.5 mm.; of wing, 8.5 mm. One male, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 15, 1910, on flowers of *Baccharis* sp.

Head very pale golden throughout, including the facial and occipital pile; parafrontals dusky, golden pollinose, with black pile; frontalia and first two antennal joints brownish-yellow, third joint and arista black. Thorax and scutellum dark, golden pollinose, producing same shade of gold-olive as that of parafrontals; the four vittae sublinear. Abdomen and legs wholly light rufous or yellowish-red, ocher-colored, the tip of venter blackish and two small blackish spots along median line on hind margin of dorsum of second and third segments and on disk of anal segment. Wings lightly infusate, pale yellowish at base. Both scales of tegulae light rust-yellow.

This species approximates the coloration and habitus of *Eurythiopsis ochracea*.

Epalpus Rondani.

I refer to this genus forms which may be at once distinguished from *Saundersiops* by lacking a transverse discal row of macrochaetae extending across third abdominal segment. The second segment never has a complete marginal row, but the third always has such.

Epalpus discalis, new species.

Length of body to end of spines, 12 to 13 mm.; of wing, 11 to 12 mm. Five females and five males, as follows: Three females, east base of Huascaray Ridge, about 7,000 feet, September 21 and 22, 1911, on foliage; one female and five males, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 3 and 15, 1910, on flowers of *Baccharis* sp.; and one female, Casahuirí, San Gaban Canyon, about 4,500 feet, February 14, 1910, on flowers of *Mikania* sp.

General color of thorax, pleurae, and parafrontals golden-olive, that of scutellum and tergum of abdomen gold-gray to olive-golden. Face and cheeks silvery to tawny-silvery, showing faintly golden in greased specimens; pile of cheeks and parafacials usually yellowish-gray but sometimes shading to dark on latter, that of parafrontals black, and that of occiput brassy-gray. First two joints of antennae wholly deep reddish-yellow; the legs normally concolorous with same, but femora often shaded with blackish or wholly black except tips, the tarsi usually more yellowish. Third antennal joint and arista wholly black. Frontalia brownish-yellow to brownish-olive and pale brown. The only exception to three post-sutural bristles is in one of the three females from Huascaray, which has four. Three postacrostichal bristles, the front one usually weak; but one male from Uruhuasi has only two, and two other males have only one. Discal bristles of scutellum usually in about two irregular transverse rows. The median marginal and discal macrochaetae of second abdominal segment form one segregated median group, and the discal of third segment another segregated median group, each group containing usually numerous bristles. Abdomen of male sometimes with more or less of reddish tinge. Edges of abdomen irregularly darker, the broad lateral hind corners of first three segments and apical half or less of anal being deep reddish-brown to blackish, sometimes only reddish and again quite black and subshining. Venter of female shining black with the pollen of tergum showing faintly on third segment and plainly on anal segment; that of male more or less broadly reddish on sides anteriorly, sometimes on all of sides but anal segment. When greased the abdomen of female becomes brown or blackish above, and the scutellum brownish-yellow. Wings wholly moderately infusate, including front scale of tegulae which is but a lobe of the wing. Hind scale of tegulae nearly white, border more or less yellowish.

Type, female, Huascaray, September 22. The single female from Uruhuasi is TD3946, and contained black maggots.

***Epalpus nigricornis*, new species.**

Length of body, 13.5 mm.; of wing, 12 mm. One male, with preceding specimens from Uruhuasi, February 3, 1910, on flowers of *Baccharis* sp.

Differs from *E. discalis* only as follows: Face and cheeks silvery-white. Antennae wholly jet-black, second joint being polished black on

front aspect. Parafacial pile black. Legs wholly blackish, only the front tarsi showing a yellowish shade, the femora and tibiae quite black as is the venter of abdomen and the tip of anal segment. Hind tegulae subfuscous with pale borders. Three postsutural and only one postacrostichal bristles. Scutellum with the weak apical pair of bristles present. The discal bristles of intermediate abdominal segments consist of only two pairs to each segment. Venter is reddish on sides anteriorly.

***Epalpus lineatus*, new species.**

Length of body, 10 to 13 mm.; of wing, 10 to 12 mm. Matucana, about 8,000 feet, one female and two males, September 8, 1912; eighteen females and three males, January 29 to 30, 1913, on foliage.

Head silvery-tawny, the clypeus more silvery than rest; parafrontals dark, showing through the pollen; frontalia and first two antennal joints reddish-yellow, third antennal joint and arista dark brown. Pile of occiput, cheeks, and parafacials brassy; that of parafrontals black. Thorax of same dull olive as parafrontals, thinly covered with silvery pollen, with four very narrow vittae of usual pattern (outer ones widely interrupted at suture, inner abbreviated just behind suture). Scutellum reddish-yellow, about same shade as frontalia and first two antennal joints. Abdomen yellowish-red, being usually slightly deeper color than scutellum, with broad median vitta of blackish showing beneath pollen; the silvery-tawny pollen showing as narrow front border to second segment, wider front border to third segment, and covering more than front half of anal segment. Venter practically same color as tergum, but no median vitta. Legs concolorous with abdomen, the tarsi light yellow. Claws and pulvilli pale yellowish, claws tipped with black. Wings evenly lightly infuscate, tegulae pearl-whitish to tawny. Pollen of abdomen has a distinctly more yellowish shade than that of head. The hind border of third abdominal segment and tip of anal segment are usually darker than rest of abdomen. Second arisal joint not strongly elongate, about twice as long as broad. Spines of abdomen and scutellum weak rather than heavy.

Type, female, January 30, TD4113 (fly, straplike uterus, and black maggots).

***Epalpus niveus*, new species.**

Length of body, 12 to 14 mm., not including spines; of wing, 13 to 14 mm. Nine males and four females, as follows: Verrugas Canyon, about 5,400 feet, one male, April 16, on foliage; June 25, two males

and one female, July 2, two males, July 23 and 24, two males and two females, all on flowers of *Buddleia occidentalis*. Matucana, about 8,000 feet, August 1, one male on foliage; August 16, one male and one female on flowers of *Baccharis* sp.

Clypeus silvery-white pollinose; epistoma, parafacials, and cheeks light golden pollinose; parafrontals silvery-white pollinose but the black ground-color showing through, unlike preceding parts whose ground-color is light. Frontalia and first two antennal joints light yellowish-brown to pale brownish, the frontalia usually darker. Third antennal joint and arista dark brown or blackish. Occiput with dark background, silvery-white pollinose. Pile of occiput and cheeks pale brassy, that of parafrontals black, that of parafacials black and yellow intermixed. Thorax blackish, with thin silvery-white pollen, same color as parafrontals, the disk with four narrow dark vittae of usual pattern. Scutellum light brown, faintly silvered, more so basally. Abdomen deep brown to black, subshining where not covered with the heavy silver-white pollen, the latter occupying the irregular lateral one-third of each segment in a broad irregular lateral vitta, the two vittae confluent posteriorly on anal segment the anterior half of which they cover. This leaves the black confined to edges of abdomen, last half of anal segment, and central area of first to third segments. Venter black, faintly silvery on sides. Legs rust-yellow, the coxae approaching shade of second antennal joint; tarsi bright light yellow, tibiae approaching same shade at times; spines of tarsi rust-yellow, those of rest of legs black. Claws yellow tipped with brown. Wings wholly deeply infuscate, quite black; tegulae quite white in both scales, save only the yellowish margins. Second arisal joint is conspicuously elongate. Spines of abdomen and scutellum heavy.

Type, female, Verrugas Canyon, July 24, TD4173 (fly, straplike uterus).

Trichosaundersia, new genus.

Differs from *Epalpus* principally in the thick pile of abdomen interspersed among the bristles and covering whole surface, as well as the thick short pile of thorax, and the deeply emarginate anal segment of female although the abdomen tapers abruptly on anal segment. The second arisal joint is only moderately elongate, about twice as long as wide. The spines of abdomen and scutellum are only moderately strong at best. Two or three postsutural, and two or three sternopleural bristles. Two

long lateral marginal pairs of scutellar bristles, and weak decussate apical pair.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Trichosaundersia lineata*, new species.

***Trichosaundersia lineata*, new species.**

Length of body, 10 to 13 mm.; of wing, 10 to 12 mm. One female and two males, Uruhuasi Bridge, San Gaban Canyon, about 6,500 feet, February 15, 1910, on flowers of *Baccharis* sp.; and one male, Casahuiri, same canyon, about 4,500 feet, February 14, 1910, on flowers of *Mikania* sp.

Whole head and thorax pale old-gold pollinose, the parafrontals and thorax with dark background showing through. Frontalia and first two antennal joints reddish-brown, third antennal joint and arista blackish. Pile of parafrontals and thoracic scutum black, that of rest of head and sides of thorax rust-yellow. Disk of thorax with four narrow vittae of usual pattern. Scutellum brownish rust-yellow, its pile black. Abdomen deep yellow-red; an irregular median vitta of black, subinterrupted at segmental sutures, usually narrowest on anal segment, widest on front border of first segment, sometimes widest on anal segment. Pile of abdomen deep rust-yellow, extending on venter, longest on posterior portions of abdomen. Legs practically concolorous with scutellum, hardly as deeply colored as abdomen. Wings wholly light fuscous, faintly tawny on extreme base; both scales of tegulae of a rich brownish rust-yellow, practically matching scutellum, rarely the hind scale subfuscous.

Type, female, Uruhuasi.

The present specimens furnish an excellent illustration of chaetotaxic variation in the same form. The type specimen shows one postacrostichal bristle on each side, this being the posterior one; three postsuturals, and three sternopleurals; two transverse discal rows of spines on scutellum. The two males from Uruhuasi agree in having only two sternopleurals, no postacrostichals, and only one transverse discal row of scutellar spines; but one has three postsuturals on each side, while the other has only two on the left side, the middle one being absent. The male from Casahuiri has three sternopleurals, three postsuturals, and three postacrostichals on each side, with two transverse discal rows of scutellar spines.

***Saundersiops*, new genus.**

Allied to *Cryptopalpus* (syn. *Saundersia*) and *Epalpus*, but may be

known by the following characters: Eyes practically bare, with only very sparse faint short hairs. Parafacials pilose. Palpi represented by two bristlets. Cheeks pilose, about equal to two-thirds eye-height in both sexes. Second antennal joint strongly elongate, about as long as third; second arisal joint conspicuously elongated; third antennal joint of male wider than that of female, broad-oval, conspicuously convex and bulged on front edge. Proboscis when fully extended about one and one-third to one and one-half times head-height, neither particularly stout nor very slender. No ocellar bristles. Vertex of female about as wide as one eye seen from above, that of male about two-thirds such width.

Three sternopleural, and four postsutural bristles; the postacrostichal bristles usually three. Scutellum with two pairs of subappressed lateral marginal macrochaetae, with or without a very weak suberect decussate or nondecussate apical pair; with the erect discal spinelike macrochaetae in two or three transverse rows, usually but not always less abundant when the weak apical pair of bristles is present. The characters of the abdominal macrochaetae are variable within the following limits: First segment with only lateral marginal and lateral discal in a bunch; but often the discal are weaker and more pointed, sometimes even bristlelike. Second segment with lateral marginal and lateral discal in heavier bunch, the discal varying from few to a dense setting; with complete marginal row, or with marginal only in middle and at sides, in either case there being two heavy separated median marginal with none or usually one but sometimes two shorter pairs between them on margin; with median discal bunch of from two to seven pairs. Third segment with ordinary to very thickly set marginal row; with few to many lateral discal as well as lateral marginal; with two to seven pairs of median discal in a transverse row or in an irregular bunch, this bunch or row connected with the lateral margin of segment by an oblique or irregular row of two to four or more macrochaetae, forming a complete transverse discal row across the segment. Anal segment bare of macrochaetae on about its forward half, the macrochaetae densely bunched on posterior half but often in more or less definite rows, sometimes with a median discal pair more or less conspicuously separated from the mass. The anal segment of female is much narrowed posteriorly and is gently but distinctly emarginate behind, the terminal bristles from the two buttocks being decussate. In the male the anal segment is still more tapered posteriorly and shows no emargination. The abdominal macrochaetae are spinelike. Venation practically same

as in *Epalpus*. Claws of female strong; those of male much stronger, nearly twice as long.

Reproductive habit, leaf-larviposition of colored maggots.

Type, *Saundersiops confluens*, new species.

***Saundersiops confluens*, new species.**

Length of body to end of spines, 11 to 12 mm.; of wing, 9.5 to 11 mm. Four males, Ollachea, San Gaban Canyon, about 9,500 feet, February 2, 1910, on flowers of euphorbiaceous shrub with habitus of *Buddleia*.

Differs from *Epalpus discalis* in color as follows: Pile of parafacials black in all cases, the black pile extending on anterior part of cheeks; but face and cheeks silvery to tawny-silvery. Sides of abdomen above usually faintly brownish-yellow or reddish, the irregular darker border of abdomen nearly obsolete except on tip of anal segment, a wide dark median vitta more or less apparent though faintly so. The second abdominal segment has a complete marginal row of macrochaetae, except in one male which shows a wide interruption in lacking two bristles on each side of the heavy median marginal pair; this male has little or no reddish tinge above on sides of abdomen. The venter is black with a little reddish on sides anteriorly in the transitional male just noted, but wholly reddish in the others save for a median broad black vitta.

Type, one of the typical males.

***Saundersiops cruciata*, new species.**

Length of body, 11 to 12 mm.; of wing, 10 to 11 mm. Four males and four females, Matucana, about 8,000 feet, as follows: One female, September 8, 1912; three males, January 29 and 30, 1913; three females, August 1, 1913; and one male, August 16, 1913. On flowers of *Baccharis* sp. and on foliage.

Facial plate silvery-white with faint golden tinge at times; cheeks and parafacials silvery with shading of light golden, latter most noticeable on cheek grooves and front margin of parafacials; parafrontals dark olive with thin covering of silver-brassy pollen; frontalia and first two antennal joints reddish-fulvous, the former sometimes lighter; third antennal joint and arista blackish. Occipital and cheek pile grayish-brassy; hairs of front and parafacials black, reaching cheeks. Mesoscutum and pleurae concolorous with parafrontals, thinly pollinose; four thoracic vittae, the inner pair linear before and wide behind suture, abbreviated a little be-

hind suture. Scutellum reddish-brown, faintly pollinose on base. Abdomen brownish-red, first segment blackish in middle; segments 2 to 4 with silvery front border and median vitta, both border and vitta successively widening on segments 3 and 4, but vitta much narrowed on tip of fourth and rarely widest on third segment. Bordering the vitta on second segment the disk is blackish shining, such blackish being extremely faint on third segment and practically absent on fourth. On venter the silvery of second and third segments spreads over whole of inner half or more of sclerite on each side, that of anal segment not widening. Legs wholly concolorous with the first two antennal joints, from coxae to tarsi, being a reddish-fulvous or yellowish-rufous. Wings wholly deeply fuscous. Hind scale of tegulae watery-white; front scale fuscous on borders, sometimes dilute on disk, sometimes wholly fuscous.

The marginal row of macrochaetae of second segment shows a gap on each side of heavy median pair about as wide as distance separating the two bristles of that pair; the transverse discal row of third segment is complete and thickly placed, somewhat irregular.

Type, female of September 8.

Saundersiops cruciata subspecies, **cayensis** new subspecies.

Length of body, 10 to 12 mm.; of wing, 9 to 11 mm. Nineteen males and three females, Huancayo, about 10,500 feet, March 25, 1913, on flowers of *Baccharis* sp. and *Cyclanthera* sp.

Differs from the *Matucana* form as follows: Pollen of face and cheeks silvery-white, without trace of golden, epistoma tawny. Mesoscutum more conspicuously olive from the more brassy pollen. Pollen of abdomen has a pronounced brassy-tawny tinge; pollinose front borders of third and fourth segments about equally wide, that of second very narrow. Wings not so deeply fuscous; tegulae more contrasted, the front scale usually smoky-black, hind scale white.

Type, TD4128 (fly, straplike uterus).

This form presents a very distinct habitus from the *Matucana* form, yet I consider it only a subspecies thereof. It occurs 2,000 to 3,000 feet higher up and about 150 miles to the southeast. The two localities are separated by snowy crests and deep canyons.

Saundersiops simillima, new species.

Length of body, 10 to 11 mm.; of wing, 10 to 11 mm. Three females from Tamboraque, about 9,000 feet, April 3, 1910, on flowers

of *Cyclanthera* sp.; one female, Matucana, 8,000 feet, January 30, 1913, on flowers of *Baccharis* sp.

Whole head pale golden pollinose, facial plate more silvery but with faint sheen of gold. First two antennal joints, lunula, frontalia, all of legs, scutellum, and abdomen reddish-fulvous. Scutellum, frontalia, and lunula usually a shade lighter than the rest. Parafrontals, occiput, mesoscutum, and pleurae dull olive, thinly gray pollinose, thoracic vittae narrow and not conspicuously defined. Occipital and cheek pile light brassy, hairs of parafacials and front black. Third antennal joint and arista brown to blackish. Tawny-gray pollen of abdomen in wide front border to third segment, extending dilutely over disk to hind margin; covering front half of anal segment; forming vitta on segments 2 to 4; showing not at all on sides of second segment. First segment dark brown in middle. The abdominal median vitta shows a dark background through the pollen. Wings rather dilute fuscous, slightly but always distinctly tawny-yellowish on basocostal portion. Both scales of tegulae tawny, nearly shade of wing bases.

Type, TD4115 (fly, straplike uterus), Matucana.

This form represents a division of *Saundersiops* of subgeneric rank.

Saundersiops simillima subspecies, ***punensis*** new subspecies.

Length of body, 9.5 to 14 mm.; of wing, 9.5 to 14 mm. Nineteen females and one male, Pachacayo, about 12,000 feet, March 26 and 27, 1913, on flowers of *Eupatorium* sp. and *Viguiera*-like composite, being especially numerous on latter.

Differs from the typical form in the pollinose front border of third segment being definitely limited behind and not extending backward to hind margin of segment (or only so in abnormal specimens), except on median vitta. Abdominal vitta rather narrower and more delicate, better defined. Seven specimens of this form (including TD4131 and the male) possess a practically complete transverse discal row of macrochaetae to third abdominal segment, while the other thirteen show the gaps characteristic of this subgenus. Many show the marginal row of second segment practically complete.

Type, TD4130 (fly, straplike uterus, black maggots). Cotypes are TD4131 (black maggots) and TD4133.

Rhachoepalpus andinus, new species.

Length of body to end of abdominal spines, 16 to 20 mm.; of wing,

14.5 to 18 mm. Two females, eastern base of Huascaray Ridge, about 7,000 feet, September 21, 1911, on foliage.

The colorational description of *Jurinia olivacea* will apply almost exactly to this species, the only differences from the whole specific description being as follows: Tibiae reddish, at least on middle. Pile of parafacials, parafrontals, and cheeks same, but that of occiput more brassy. Frontalia brown. Palpi represented by a pair of minute black hairy papillae, slightly longer than wide. Thoracic vittae wider behind suture, but less distinct; hind angles of mesoscutum more nearly concolorous with disk of same. Three postsutural and no postacrostichal bristles, but in the smaller female there is an extra very weak postsutural between the two front ones, and in the larger female there is a weak postacrostichal on the right side. Scutellum with only one marginal pair of macrochaetae, being at lateral hind corners, all the other macrochaetae being spine-like and arranged in about four transverse rows. The olive-golden of abdominal tergum extends over practically all of anal segment, and the black of venter shows not at all on edges of tergum, but the heavy marginal bunches of black spinelike macrochaetae give same effect of black margin. The second and third abdominal segments have each a thickly set marginal row of spinelike macrochaetae, the third segment being without discal, and the second segment having a discal bunch of about twelve pairs in about three irregular transverse rows. Anal segment covered on apical half or less with macrochaetae in two or three transverse rows of spinelike ones in front of the terminal brush of bristles, the bunch not being geminate nor with separated macrochaetae in front. The olive-golden of tergum extends more or less faintly on anterior half, more or less, of last three segments of venter. Wings and tegulae same, the hind scale of tegulae quite deeply golden on margin in the larger female. The proboscis is short and stout, heavy; when fully extended being at most equal to head-height. Anal abdominal segment very broad posteriorly, with pronounced apical emargination, but more tapered than in *Quadratosoma*, the length of hind border being equal to about two-thirds that of front border. A weak but rather long pair of closely approximated proclinate ocellar bristles; third antennal joint about one and one-half to one and two-thirds times as long as the elongated second, quite evenly rounded apically.

Type, the larger female.

Rhachoepalpus cinereus, new species.

Length of body, 11 to 15 mm., not including spines; of wing, 11 to 15 mm. Thirty-four males and three females, as follows: Matucana, 8,000 feet, one female, January 30, 1913; five males, August 1, 1913; one female and three males, August 16, 1913, all on foliage. Verrugas Canyon, about 5,500 feet, one female, June 25, 1913; nineteen males, July 9 and 10, 1913, on flowers of *Buddleia occidentalis*; and seven males, July 23 and 24, 1913, on same flowers.

Head silvery-white pollinose, with bluish tinge from the black ground color beneath; the parafrontals dusky olive in ground color. Antennae black, the second joint shining. Frontalia dark brown. Occipital pile grayish or bluish-white, extending on lower edge of cheeks; hairs of front, parafacials, and cheeks black. Thorax, scutellum, and abdomen dull olive from the brassy-cinereous pollen covering all, yet whole rather shining as though lacquered over. The four narrow thoracic vittae most indistinct at best, rarely visible. From behind the parafrontals show same olive as rest of upper parts, with narrow borders of silvery. Venter concolorous, with silvery on sides. Pleurae subsilvery. Legs blackish, the tibiae faintly to noticeably reddish in good lights. Wings rather deeply fuscous throughout. Front scale of tegulae translucent subhyaline, with black narrow border and fringe of fine pilosity; hind scale opaque watery or watery-whitish, with tawny border. Pulvilli tawny-yellowish, claws broadly yellow on base.

Type, female, Matucana, January 30.

Rhachoepalpus nitidus, new species.

Length of body, 12 to 13 mm.; of wing, 12.5 to 13 mm. Two females, Matucana, 8,000 feet, August 16, 1913, on foliage.

Differs from *R. cinereus* in lacking pollen other than a very thin and unnoticeable coat. Whole head blackish in ground color, with only a thin bloom of silvery over it. Parafrontals, thorax, scutellum, and abdomen deep shining metallic greenish-black, the thoracic vittae scarcely visible, pollen of abdomen and other parts visible only in oblique lights.

Legs, wings, and tegulae practically same, even to the faint reddish of tibiae in one specimen.

(To be continued.)

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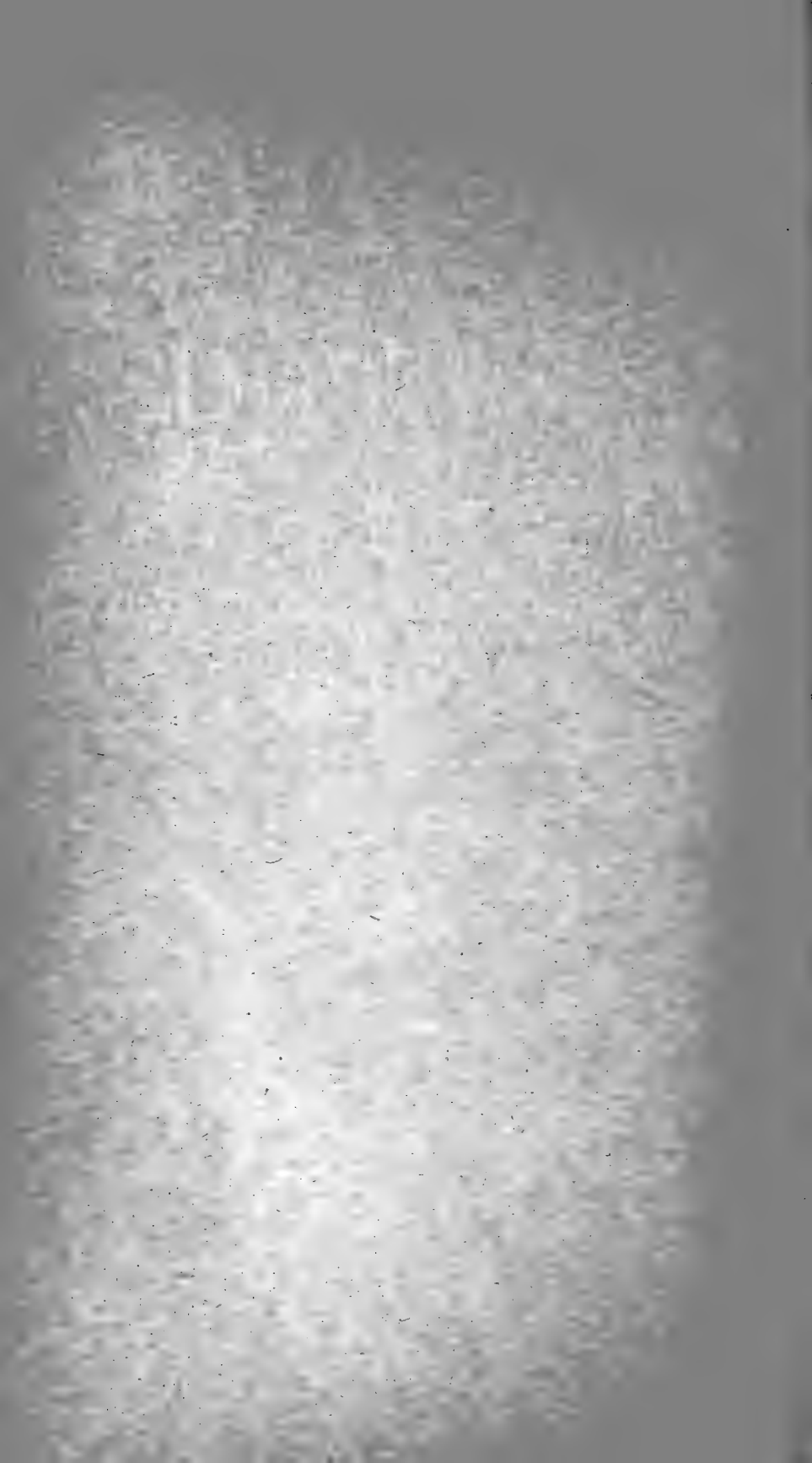
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A NEW CALIFORNIAN COLEOPHORA ON PLUM

(*Lepidoptera, Coleophoridae*)

By CARL HEINRICH

Coleophora sacramenta, new species.

Palpi white, streaked with golden brown above; second joint tufted. Antennæ white, distinctly annulated beyond second segment with light golden brown; base covered above by large white projecting tuft. Face, head, and thorax silvery white. Fore wings white, faintly peppered with brown scales, the irroration becoming more apparent toward the tips of the wings; cilia a light golden fuscous, shading to dark brown at apex of wings. Hind wings dull lead-gray; cilia on costa concolorous; dorsal cilia golden fuscous. Abdomen white, faintly and irregularly irrorated with fuscous scales; anal tuft silvery white. Tarsi faintly annulated with golden brown.

Alar expanse, 15 mm.

Habitat, Santa Clara, California.

Food plant, *Prunus*.

Type, Cat. No. 18908, U. S. Nat. Mus.

Described from six specimens received from Mr. E. O. Essig, secretary of the State Horticultural Board of California, with request for a name. He states that the species is quite destructive to the foliage of the cultivated plum trees in the vicinity of Sacramento. The adult moths, according to data on the specimens, issue during the latter part of April.

The larva is not a leaf miner, but belongs to that group which feeds externally during the whole of the larval period. The mature case is 8 to 8.5 mm. long, pistol-formed, similar to the European *C. currucipennella*, though not quite so rough, black except at the upper edges of the flaps, which shade into brown. The mouth is slightly deflected, and the posterior end makes a sharp right angle with the upper edge of the case.

NOTE ON HEMIHYALEA AND SOME SPECIES OF AMASTUS

(*Lepidoptera, Arctiidae*)

By HARRISON G. DYAR

The genera *Hemihyalea* and *Amastus* differ only in that in the former "vein 3 of fore wing arises at or near the angle of the cell," while in the latter it is distant from the angle. The species are not sharply marked by this character, as in some vein 3 is intermediate in position, so that doubt can arise. I think that *cornea* Herrich-Schäffer, under which Hampson wrongly sinks *mansueta* H. Edwards, *rhoda* and *daraba* Druce, will find a better place in *Amastus*. Also *ergana* Dognin, which Hampson places in *Hemihyalea*, together with *perergana* and *tenuimargo* of Dognin, described since Hampson's work. On the other hand, *proba* Schaus, placed by Hampson in *Elysium*, and *edaphus* Dyar, described by me in *Amastus*, clearly belong in *Hemihyalea*. The species of this genus separate as follows, taking Hampson's table as a basis (Cat. Lep. Phal., iii, 130, 1901).

Abdomen crimson or reddish.

Male antennæ strongly bipectinated.

Front of head white.

Fore wing purplish throughout *tristis* Rothschild

Fore wing hyaline with moderate brown border *brunnescens* Rothschild

Front of head concolorous with thorax.

Fore wing distinctly hyaline, at least over disk, unbanded.

Thorax and margins of fore wing dark brown . *fusca* Rothschild

These parts pale brown var. *columbiana* Rothschild

Fore wing subhyaline to opaque, generally showing markings.

Hind wing largely or entirely suffused with crimson.

Fore wing ocher-brown, the markings slight . *annario* Dyar

Fore wing ocher-brown, irrorate and with pale spots
surrounded with blackish dots . *ochracea* Rothschild

Fore wing largely blackish; bands represented by pale
spots on costa and margin or absent . *nimbipicta* Dyar

Hind wing crimson along inner area, seldom extending above
median vein.

Abdomen with dorsal black patches . *edwardsii* Packard

Abdomen without dorsal black patches.

Disk of fore wing subhyaline.

Bands of fore wing more or less distinct.

Bands brown; termen brown as if burnt,
but the color diffused inward *daraba* Druce

Bands blackish; termen brown, sharply
dentately limited inwardly . *euornithia* Dyar
Bands of fore wing obsolete.
Light yellowish testaceous *testacea* Rothschild
Dark tan brown.

Bands, if indicated, on costa only.
rhoda Druce

Bands indicated on both costa and
margin . var. *hidalgonis* Dyar

Disk of fore wing opaque . *mansueta* H. Edwards
Hind wing without any crimson.

Wings yellowish with gray powdering . *labecula* Grote
Wings hyaline whitish with blackish powdering.

splendens Barnes & McDunnough

Male antennæ very shortly bipectinated *utica* Druce
Abdomen without red tint.

Hind wing not yellow.

Fore wing hyaline straw-color.

Abdomen orange buff *hyalina* Druce

Abdomen pale yellowish *alba* Druce

Fore wing gray with darker bands having more or less distinct yellow
spots on the veins.

Hind wing paler than fore wing, unmarked . *diminuta* Walker

Hind wing of the color of fore wing, veins dark *xanthosticta* Hampson

Fore wing uniformly blackish.

Hind wing pale, whitish *melas* Dognin

Hind wing blackish *hades* Druce

Hind wing yellow.

Apex of hind wing touched with fuscous *proba* Schaus

Hind wing fuscous gray from costa over cell *edaphus* Dyar

Hemihyalea tristis Rothschild.

Hemihyalea tristis Rothschild, Ann. Mag. Nat. Hist., (8), iv, 213, 1909; Nov.
Zool., xvii, pl. xii, fig. 17, 1910.

Hemihyalea brunnescens Rothschild.

Hemihyalea brunnescens Rothschild, Ann. Mag. Nat. Hist., (8), iv, 213, 1909;
Nov. Zool., xvii, pl. xii, fig. 25, 1910.

Hemihyalea fusca Rothschild.

Hemihyalea fusca Rothschild, Ann. Mag. Nat. Hist., (8), iv, 214, 1909;
Nov. Zool., xvii, pl. xii, fig. 24, 1910.

Hemihyalea erganoides peruviana Rothschild, Nov. Zool., xvi, 277, 1909.

Hemihyalea fusca columbiana Rothschild, Nov. Zool., xvii, 50, 1910.

Rothschild says (Nov. Zool., xvii, 54, 1910) that what he originally identified as *H. erganoides* proved to be not that species, but *Hemihyalea fusca columbiana*, differing from *fusca fusca* in being pale brown. Therefore his *H. erganoides peruviana*, which differed from *erganoides* Rothschild (not Dognin) in being dark brown, must be the same as *fusca fusca*.

Hemihyalea annario, new species.

Head, thorax, and fore wing brown, the latter slightly irrorate, sub-translucent over the cell and with a dark mark on the discal cross vein; inner margin darker, especially along its edge; in one specimen, traces of dark subterminal dots between the veins. Pectus brown; femora red above; abdomen crimson dorsally except the anal segment, which is partly shaded only. Hind wing subhyaline rose-color except the costal edge, which is dark testaceous. Expanse, 64 mm.

Cotypes, two females, No. 18906, U. S. Nat. Mus.; Tuis, Costa Rica, June, 1909 (W. Schaus).

One of the specimens is labeled "*H. fuscescens* Rothschild," in Sir George Hampson's writing, but it is not what I identify as such. It is close to *ochracea* Roths., and may be an immaculate form of that species, though it seems darker brown and broader winged.

Hemihyalea ochracea Rothschild.

Hemihyalea ochracea Rothschild, Ann. Mag. Nat. Hist., (8), iv, 213, 1909.

Hemihyalea nimbipicta Dyar.

This will be more fully described in my fifth paper on Mexican lepidoptera, to appear in the Proceedings of the U. S. National Museum. The specimens I make the types are very dark on fore wing, but with the dark border of hind wing much reduced. Lighter specimens show a brown ground crossed by black macular bands, more or less replaced on costa and inner margin by light ocher patches. The hind wings have a discal spot and the apices rather broadly dark.

Hemihyalea edwardsii Packard.

The well-known Californian species.

Hemihyalea daraba Druce.

Phæoptera daraba Druce, Ann. Mag. Nat. Hist., (6), xiii, 173, 1894.

Treated by Hampson as a subspecies of *H. cornea* Herrich-Schäffer (Cat. Lep. Phal., iii, 131, 1901) but quite distinct as Rothschild has shown (Nov. Zool., xvi, 277, 1909). The discal area of fore wing is generally more or less hyaline, the bands quite distinct in good specimens. The dark brown margins are characteristic, the wing looking as if burnt around the edge.

Hemihyalea euornithia Dyar.

To be more fully described in my fifth Mexican paper. It is distinguished from *daraba* by the brown, dentate, terminal border and the much darker bands.

Hemihyalea testacea Rothschild.

Hemihyalea testacea Rothschild, Ann. Mag. Nat. Hist., (8), iv, 213, 1909.

Hemihyalea argillacea Rothschild, Nov. Zool., xvi, 277, 1910.

A very distinct and uniform species, which I have only from Mexico. *H. argillacea* was described from Gold Hill, Oregon; but Rothschild cites also specimens from Guatemala. From the description, I can make nothing of *argillacea* but rubbed *testacea* and have so tentatively referred it.

Hemihyalea rhoda Druce.

Phagoptera rhoda Druce, Ann. Mag. Nat. Hist., (6), xiii, 173, 1894.

Hemihyalea fuscescens Rothschild, Nov. Zool., xvi, 277, 1909.

A brown species, the fore wing strongly subhyaline and irrorate, the bands practically obsolete. The subspecies *hidalgonis* will be described in my fifth Mexican paper.

Hemihyalea mansueta H. Edwards.

Halesidota mansueta H. Edwards, Pap., iv, 75, 1884.

Hemihyalea battyi Rothschild, Nov. Zool., xvi, 278, 1909.

A rather variable species. Fore wing generally opaquish dark ocher, the outer margin narrowly burnt brown. When bands appear, they consist of macular ocher yellow ones, surrounded by blackish dots. This is about the commonest Mexican species and extends southward at least as far as Colombia.

Hemihyalea labecula Grote.

The well-known Coloradan species.

Hemihyalea splendens Barnes & McDunnough.

Hemihyalea splendens Barnes & McDunnough, Journ. N. Y. Ent. Soc., xviii, 149, 1910.

A handsome species coming from Arizona.

Hemihyalea proba Schaus.

Phægoptera proba Schaus, Proc. Zool. Soc. Lond., 1892, 281.

Elysia proba Hampson, Cat. Lep. Phal., iii, 111, 1901.

Hemihyalea edaphus Dyar.

Amastus edaphus Dyar, Proc. U. S. Nat. Mus., xlv, 286, 1913.

The species of *Amastus* with the fore wing completely hyaline except for a narrow border of scales on the margin separate as follows:

Pectus and venter of abdomen ocher.

Neck with crimson ring; patagia and tegulæ edged with buff . *hyalina* Dognin

Neck not crimson dorsally; thorax unicolorous.

Thorax and wing margins ocher . . . *cornea* Herrich-Schäffer

Thorax and wing margins brown . . . *erganoides* Dognin

Pectus and venter of abdomen reddish.

Tip of abdomen, thorax, and border of wings brown-black . *tenuimargo* Dognin

Abdomen all red dorsally; thorax and margin of wings brown . *diaphenes* Dyar

Amastus hyalina Dognin.

Phægoptera hyalina Dognin, Le Nat., (2), iii, 14, 1889.

Amastus hyalina Hampson, Cat. Lep. Phal., iii, 143, 1901.

Amastus rubridorsata Dognin, Het. Nouv. l'Am. du Sud., vi, 5, 1912.

The male has rose-red hairs on the dorsum of abdomen; those of the female are pale brown.

Amastus erganoides Dognin.

Hemihyalea erganoides Dognin, Ann. Ent. Soc. Belg., xlv, 32, 1902.

Amastus hyalina orientalis Rothschild, Nov. Zool., xvi, 279, 1909.

The male and female differ in the color of the abdomen as above.

Amastus cornea Herrich-Schäffer.

Phægoptera cornea Herrich-Schäffer, Ausser. Schm., ff. 61, 62, 1853.

Herrich-Schäffer figures male and female, differing in the color of the abdomen, as in the preceding two species. He shows a pale subterminal band in the male, which I do not find in my specimens.

Amastus tenuimargo Dognin.

Hemihyalea tenuimargo Dognin, Het. Nouv. l'Am. du Sud., vi, 5, 1912.

Amastus diaphenes, new species.

Head and thorax anteriorly brown; wings hyaline, margins narrowly brown; back of thorax and abdomen dorsally rose-crimson; orbits, base of palpi, pectus, and venter of thorax of the same red color; venter of abdomen brown. Expanse, 61 mm.

Type, male, No. 18907, U. S. Nat. Mus.; Colombia (Schaus collection, purchased from Staudinger).

TWO NORTH AMERICAN SYRPHIDÆ

By FREDERICK KNAB

Ocyptamus jactator (Loew).

Syrphus jactator Loew, Wien. Ent. Monatschr., vol. 5, p. 40 (1861); Berlin. Ent. Zeitschr., vol. 9, p. 156 (Century VI, No. 46) (1865).

The National Museum possesses a single specimen of this species, taken at Biscayne Bay, Florida, by Mrs. A. T. Slosson. Like Loew's type, it is a male and it agrees with his description in every detail except one. He indicates a broad yellow fascia at the base of the fourth abdominal segment, as well as of the second and third segments. The specimen before me has the fourth segment ferruginous, with a narrow median blackish stripe. The difference, however, is merely due to the condition of the specimen, decomposition of the body contents having destroyed the pigment in that segment. With close scrutiny the location of the yellow band may still be made out. The bright yellow scutellum and abdominal fasciæ suggest *Syrphus*, but the other characters are all typical of *Ocyptamus*. The wing is smoky for the most part, only the second basal cell and the region behind it being clear; there is a yellowish shade within the clouded portion, anteriorly beyond the middle. Loew described the species from Cuba and its occurrence in Florida emphasizes the existence of a large Antillean element in the fauna of southern Florida.

Syrphus diversifasciatus, new species.

Male: Face prominent, yellow, descending almost perpendicularly, a diffuse ferruginous median shade, heaviest on the tubercle and about the mouth, clothed with white pile except on the shining tubercle; cheeks black; frons ferruginous, broadly blackish along the eyes, clothed with coarse black hair which extends well down at the sides of the antennæ; vertex black; occiput with whitish pile. Antennæ ferruginous beneath,

sooty dorsally, subpruinose. Thorax shining blue-black, with white pile dorsally and on the pleuræ. Scutellum large, dull yellow, broadly blue-black on the sides, the hairs long, whitish. Abdomen dorsally shining violet-black, with black velvety fasciæ on segments 2 to 5 and yellow fasciæ on segments 3 and 4; second segment with a broad, straight, velvet-black fascia behind the basal third, extending to the lateral margins and leaving a narrow, shining posterior margin; third segment with a broad yellow fascia situated medianly, very slightly arcuate, of nearly equal width throughout and extending close to the lateral margins, preceded and followed by narrower velvet-black fasciæ, leaving the anterior and posterior margins of the segment, and more narrowly the lateral margins, shining violaceous; fourth segment with a broad yellow fascia submedianly, straight on its anterior margin, shallowly emarginate on its posterior margin and not attaining the lateral margins of the segment, preceded by a narrow and followed by broad fascia of velvet-black, the anterior, posterior, and lateral margins of the segment shining violaceous; fifth segment with a large median velvet-black fascia, leaving the margins shining violaceous; lateral hairs whitish, long on the first two segments. Legs dull ferruginous, the femora dark at base, the tarsi infuscated distally; hind femora with a black ring close to apex, the hind tibiæ with less distinct dark rings near base and close to apex. Wings hyaline, the subcostal cell yellowish brown; third vein gently but distinctly arcuate above the first posterior cell. Halteres with ferruginous brown knob.

Length: Body, 8 mm.; wing, 8 mm.

Female: Frons broad, shining black, a broad arcuate fascia of whitish pollen across the middle and extending forward at the sides, a yellow lunate spot just before antennæ; median stripe of face blackish. Abdomen with the yellow fasciæ of segments 3 and 4 before their middle, straight on the anterior margins, gradually narrowed to the middle on their posterior margins, the velvet-black fasciæ preceding them very narrow, the ones behind them broad and following their contour; back fascia of fifth segment somewhat before middle; segments 2 to 5 with broad shining posterior margins; sixth segment wholly shining black.

Length: Body, 9 mm.; wing, 8 mm.

Localities: Walnut Creek, California, June, 1914, one male, one female (W. M. Davidson); California, one male; Williams, Arizona, July 27, one female (Schwarz & Barber).

Type, Cat. No. 19037, U. S. Nat. Mus.

In the female from Arizona the fifth abdominal segment shows a small yellow spot at the sides of the black fascia; on the mesonotum a pair of narrow subpollinose grayish stripes are visible; in other respects it agrees with the female from California.

NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

(Continued from page 144)

Rhachoepalpus argenteus, new species.

Length of body, 13 to 15 mm., not including spines; of wing, 12 to 14.5 mm. One female and two males, Verrugas Canyon, 5,500 feet, July 9 and 10, 1913, on flowers of *Buddleia occidentalis*; one male, Matucana, 8,000 feet, August 1, 1913.

Differs from *Rhach. cinereus* in the pollen of thorax, scutellum and abdomen being silvery, of a decided whitish shade, the thoracic vittae quite distinct. Ground color of abdomen reddish on edges and tip, showing through the pollen, also slightly in bristle-row area along hind margin of second and third segments. Hind scale of tegulae more nearly white, with faintly tawny border; front scale more translucent, with black narrow border and fringe of fine pilosity.

Type, TD4170 (fly, uterus).

Quadratosoma, new genus.

General characters of *Epalpus*. Description is of male only. Second antennal joint elongate, third about one and one-fourth to one and one-half times as long as second. Second arisal joint short, not over twice as long as wide. Male front at vertex about two-thirds of eye-width. Proboscis slender and elongate, when extended about twice head-height, the part beyond geniculation about one and one-half times head-height.

Three sternopleural bristles; four postsutural, and one to three acrostichal both before and behind suture but the two anterior pairs in each case when present are weak. Scutellum with two lateral pairs of ordinary macrochaetae, and erect spinelike macrochaetae on disk and margin, those on margin longest except the median marginal pair. Abdomen subquadrate in outline in male, the anal width but little less than basal

width. Buttocks of anal segment pronounced, the emargination especially distinct. Abdomen without discal macrochaetae save one or two short pairs on second segment and the buttocks-bunches which cover less than half the length of anal segment. Claws of male about as long as last tarsal joint.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Quadratosoma rufum*, new species.

***Quadratosoma rufum*, new species.**

Length of body, 12 to 14 mm.; same to end of abdominal spines, 13.5 to 15.5 mm.; of wing, 12.5 to 13.5 mm.; of proboscis beyond geniculation, 4.75 to 5.25 mm. Two males, Uruhuasi Bridge, about 6,500 feet, February 3 and 15, 1910, on flowers of *Baccharis* sp.

Head pale yellowish, rather thinly silvery pollinose, the epistoma especially shining; parafrontals obscure greenish-brown, frontalia light velvety-brown, lunula and first two antennal joints shining brown, third antennal joint and arista soft brown. Ocellar area, upper occipital area, and parafrontals old-gold pollinose. Occipital pile brassy-gray, parafacial and parafrontal pile black. Thorax thinly pale golden pollinose, leaving four narrow vittae of the usual pattern. Scutellum pale yellowish-brown in ground color, with same pollen. Abdomen wholly rufous or pale red; with a very faint pollen in patches in oblique lights both above and below, not apparent at all in direct view. Pile of abdomen thin and delicate. Legs wholly concolorous with abdomen. Wings wholly and evenly infuscate. Tegulae with about same infuscation as wings, margins narrowly yellowish.

***Melanepalpus*, new genus.**

General characters of *Epalpus*. Description is of both sexes. Proboscis extended a little longer than head-height. Second arisal joint more or less elongate. Female front at vertex a little more than eye-width, that of male about two-thirds eye-width. Third antennal joint of female about one and one-fourth times the elongate second joint, that of male fully one and one-half times second joint.

Two to three sternopleural, two to four postsutural bristles; none to four postacrostichal, in latter case the two anterior ones weak; and none to three preacrostichal, in latter case the hind one strongest. Abdominal macrochaetae practically same as in *Quadratosoma* and *Eulasiopalpus*. Anal segment wide and buttocks-like in both sexes, but abdomen rounded

rather than subquadrate. Anal width of abdomen fully two-thirds basal width in both sexes. No discal abdominal macrochaetae except the buttocks-bunches of anal segment which occupy less than one-half the length of segment. All the tarsi rather heavy and thickened, front tarsi of female hardly wider than others.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Melanepalpus albipes*, new species.

***Melanepalpus albipes*, new species.**

Length of body, 15 mm.; same to end of abdominal spines, 16.75 mm.; of wing, 15 mm. One female, east base of Huascaray Ridge, about 7,000 feet, September 22, 1911, on foliage.

Coloration almost identical throughout with that of *Eulasiopalpus albipes* T., the only differences being as follows: Head more silvery, without so deep a smoky tinge; brassy-smoky area of cheek-grooves extending down to vibrissae and peristomalium. Parafrontals much darker, frontalia not so black when viewed obliquely from in front; no palpi. Thoracic pollen so indistinct as not to indicate vittae. Abdomen hardly at all shining; venter with a thin coat of pollen showing in patches in oblique view, hardly apparent above except on sides of anal segment. Legs, wings, and tegulae same.

This is another case of similar coloration in species of distinct genera inhabiting the same locality, the present species being almost a duplicate of *Eulasiopalpus albipes* and *Eudejeania huascaraya* so far as colorational effect and general form go. Even minute details of color largely agree in this species and *E. albipes*.

***Melanepalpus fulvus*, new species.**

Length of body, 12 mm.; same to end of spines, 13.5 mm.; of wing, scant 12 mm. One male, Uruhuasi Bridge, about 6,500 feet, February 15, 1910, on flowers of *Baccharis* sp.

Head wholly silvery-white pollinose, only the parafrontals greenish-dusky with a brassy shade to the pollen extending on orbits and upper occipital area. Frontalia pale velvet-brown. Lunula and first two antennal joints yellowish-brown, more or less shining; third antennal joint and arista brown. Occipital pile gray, other head pile black. Thorax dark in ground color, with an old-gold pollen and a faint grayish bloom giving way on sternum to cinereous; the usual four narrow vittae, the median pair faint. Scutellum and abdomen reddish in ground color, the whole

with a pale silvery-gold pollen except on lateral edges and venter which are reddish and shining. Legs reddish, concolorous with venter, the tarsi dusky blackish. Wings wholly infusate. Front scale of tegulae smoky-blackish, almost like wings; hind scale wholly deep smoky-golden, almost matching the shade of abdominal pollen as it appears in oblique view with the silvery tinge less apparent.

Trichoepalpus, new genus.

Close to *Melanepalpus*, from which it differs as follows: Female front at vertex about equal to eye-width or somewhat less. Proboscis beyond geniculation about three-fourths of head-height. Third antennal joint of female one and one-fourth to one and one-third times second. Two or three sternopleural bristles; two postsutural bristles, being the anterior and posterior ones; one postacrostichal, being the posterior one; and no preacrostichal. Scutellum and anal segment less densely set with spines; the latter with sparse arrangement of same on posterior half or less, sometimes confined to a subdiscal transverse row with a few weak ones at tip. Whole abdomen densely clothed with long yellowish-gold to reddish-gold pile, longest behind where it nearly equals the foremost spines of anal segment and surpasses the apical spines of same. The anal segment is wide and strongly emarginate, but there are no conspicuous buttocks-bunches of spines, their place being taken by the dense pile which forms in two bunches parted on median line apically and more or less interspersed with the black spines. Front tarsi of female noticeably widened.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Trichoepalpus emarginatus*, new species.

Trichoepalpus emarginatus, new species.

Length of body, 11 mm.; of wing, 10.5 mm. Two females; one, Manchi, Ecuador, about 7,500 feet, November 22, 1910, on flowers of *Baccharis floribunda*; and one, east base of Huascaray Ridge, about 7,000 feet, September 22, 1911, on foliage.

Rufous, head and thorax pale golden pollinose, facial plate and cheek grooves more watery. Third antennal joint and arista brown. Occipital pile yellowish, rest of head pile black. Parafrontals and mesoscutum showing more or less olive through the pollen. Scutellum a shade lighter than the deeply rufous abdomen, being nearly shade of first two antennal joints and legs, while frontalia are about shade of abdomen. Wings lightly fuscous throughout, dilute yellowish on basocostal portion. Both

scales of tegulae approaching a golden-fuscon shade, the front scale more nearly shade of wing-bases, while hind scale approximates the shade of abdomen.

Type, the Ecuadorian specimen.

Xanthoepalpus, new genus.

This genus is erected for *Epalpus bipartitus* v. d. Wulp. Mr. J. Bischof, in Zool.-bot. Ges. Wien, vol. LIV, pp. 89-94, has treated what he terms the "Epalpus-Arten der Gruppe bipartitus v. d. Wulp." His group, however, as might be expected from its being founded solely on colorational similarity, is not a natural one. It includes thirteen species all having a color plan similar in general effect to that of the North American *Epalpus bicolor* Will. The present genus includes only a few of these species, probably taking in *bicolor* Will., *flavoscutellatus* Bisch., and *semiflavus* Bisch., besides the species described below.

Both the scutellum and abdomen have spinelike macrochaetae; almost always four postsutural bristles present, but sometimes only three; either three or four postacrostichal bristles; usually three preacrostichal, but sometimes only two; usually three but sometimes four presutural bristles. Discal abdominal macrochaetae are present at least on second segment. Three or four sternopleural bristles.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Epalpus bipartitus* v. d. Wulp.

Note.—I am aware that Mr. E. E. Austen has stated *bipartitus* to be the same as *bicolor* (Ann. Mag. N. H., ser. 7, vol. XIX, first footnote to p. 327), but I doubt this synonymy.

Xanthoepalpus gabanus, new species.

Length of body, 14.5 mm.; of wing, 12 mm. One male, Casahuiri, about 4,500 feet, February 14, 1910, on flowers of *Mikania* sp.

Differs from *X. bipartitus* as follows: First two antennal joints and whole of legs reddish or light brownish-red. Pile of parafacials is blackish, but it may appear grayish below. Second arisal joint well elongated. First abdominal segment with macrochaetae on sides and ventral plate; second segment with a front marginal row of about ten connected by a few discal with the longer row of hind margin; third segment with a few discal. Four postsutural bristles and four postacrostichal; three presutural and three preacrostichal.

The first three abdominal segments above and below are wholly light

clear yellow, excepting only a blackish median triangle on first segment beneath scutellum; anal segment wholly blackish, and thickly spinose throughout. Third segment has a thickly-set continuous row of marginal macrochaetae; but that of second segment is not continuous, being well interrupted on sides. The proboscis extended is about equal to head-height. No ocellar bristles. Third antennal joint hardly longer than second, convex on front edge and rounded apically. Four sternopleural bristles.

The following formulae express the comparative chaetotaxy of the five species here referred to this genus, with reference to the four inner meso-scutal rows. A stands for acrostichal (preacrostichal and postacrostichal), and D for (outer) dorsocentral (presutural and postsutural).

	X. bicolor (Colorado)		X. bipartitus (Mexico)		X. gabanus (Peru)		X. semiflavus (Bolivia)		X. flavoscutellatus (Brazil)	
	A	D	A	D	A	D	A	D	A	D
Before suture	2	3	3	3	3	3	3	4	3	3
Behind suture	3-4	4	3-4	4	4	4	3	4	3	3-4

Chromoepalpus, new genus.

General characters of *Epalpus*. Description is from female only. Front of female at vertex about one and one-fourth times eye-width. No ocellar bristles. Only one proclinate orbital bristle in female. Second antennal joint moderately elongate; third joint of female convex on front edge, about one and one-half times as long as second; second arisal joint short, no longer than broad. Parafacials wide, cheeks of female more than one-half eye-height. Proboscis extended a little longer than head-height, no palpal bristlets. Front tarsal joints of female hardly at all widened.

Two sternopleural bristles; three postsutural, the next to front one wanting; no acrostichal either before or behind suture. Scutellum with only one lateral marginal pair of ordinary macrochaetae, set with five pairs of straight spinelike macrochaetae on and near hind margin, leaving most of disk bare. Abdomen short-oval, narrowly subtruncate at tip which is faintly concave in outline from above. First segment with only two lateral marginal macrochaetae; second segment with five lateral spinelike, three being marginal and two shorter ones submarginal or subdiscal; about ten macrochaetae closely placed on hind margin of second segment in middle, leaving wide space between same and the lateral ones, and a median discal bunch of twelve shorter ones more widely spread along anterior margin of segment; third segment with a marginal

row of strong and short ones intermixed, the short ones more or less submarginal at sides, and a pair of short median discal ones; anal segment with weak apical and stronger discal thinly covering about posterior half of segment. Ventral plates with strong spine bunches. Venation typical, no stump at bend of fourth vein, the last section of latter strongly bent in at base.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Chromoepalpus uruhuasi* new species.

***Chromoepalpus uruhuasi*, new species.**

Length of body, 12 mm.; same to end of spines, 13.5 mm.; of wing, 12 mm. One female, Uruhuasi Bridge, about 6,500 feet, February 3, 1910, on flowers of *Baccharis* sp.

Head with tawny-silvery pollen, parafrontals dusky with silvery pollen; frontalia, lunula, and first two antennal joints light reddish-brown, third joint and arista brown. Occiput dark throughout, cinereous pollinose, pile brassy-gray. Parafacial and cheek hairs black. Thorax, pleurae, and scutellum blackish, thinly silvery. Abdomen light yellow, with black tip and median vitta. The abdominal black occupies the median impressed area of first segment; narrow median vitta on second segment; much broader median vitta on third segment, spreading along hind border on to venter, widest at sides of segment; and whole anal segment above and below, with its ventral plate and the ventral plate of third segment. Legs wholly deep rust-yellow or pale brownish-red, being a much deeper shade than the yellow of abdomen. Wings wholly infusate, both scales of tegulae even more deeply infusate.

Type, TD3941 (fly, dissection of uterus, slide of colored maggots).

This species approaches the habitus of *Xanthoepalpus gabanus*.

Tribe HYSTRICIINI

***Jurinia olivacea*, new species.**

Length of body to ends of anal bristles, 17 mm.; of wing, 15 mm. One female, eastern base of Huascaray Ridge, about 7,000 feet, September 21, 1911, on foliage.

General olive-golden to golden-olive, the venter shining black and legs wholly black. Whole face and cheeks honey-gold pollinose, extending on the parafrontals in oblique lights. Thorax and parafrontals golden-olive. Pile of parafacials and parafrontals black, with a few blackish hairs on cheeks; occipital pile brassy-gray or yellowish. Frontalia pale

brownish-red. Antennae wholly black, including arista. Palpi reddish-yellow, the constricted basal half blackish, the tips faintly and indistinctly dusky. The usual four narrow dark vittae on thorax. Scutellum and hind angles of mesoscutum reddish-honey color, but pollinose and not conspicuously departing from general shade of coloration. Four postsutural and two postacrostichal bristles, the hindmost of latter wanting. Scutellum with three lateral subappressed macrochaetae on one side and two on the other, no apical pair; discals erect and spinelike, in about three transverse rows. Tergum of abdomen wholly olive-golden, only a black patch on each side of apical half of anal segment. The first two segments have no marginal macrochaetae other than the lateral ones, except that second segment has a median marginal row of six with two shorter median pairs between the three on each side, one pair in front of the other; second segment with a discal subarcuate row of eight reaching front border of segment on median line, with a short median pair behind row; third segment with discal arcuate row of eight, and two short ones in middle between the four on each side, also with thickly set marginal row which becomes a double row at sides of segment; apical half of anal segment with a geminate bunch of marginal to discal macrochaetae, the bunch being emarginate in middle anteriorly, and a median transverse row of four a little in front of the same. At sides of the segments the black of venter shows narrowly. Wings infusate; tegulae similarly infusate, the hind scale narrowly yellowish on margin. Claws and pulvilli yellow, tips of former black. Proboscis when extended distinctly longer than head-height, the part beyond geniculation not especially stout. The anal segment of abdomen is rapidly tapered to a very narrow tip, and is not at all emarginate apically. No ocellar bristles. Third antennal joint is about one and one-half times as long as second, widened, rounded-truncate apically.

(To be continued.)

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NEW AMERICAN LEPIDOPTERA

By HARRISON G. DYAR

Family ARCTIIDÆ

Halesidota malodonta, new species.

Thorax and abdomen buff-straw color; head and tegulæ darker shaded; fore femora reddish inwardly. Fore wing pale yellow, veins dark brown; basal area clear; beyond this rows of brown dots in confused rings, drawn into lines between the veins, subterminally forming long cusps; a terminal row of long ovate rings between the veins. Hind wing clear creamy white. Expanse, 45 mm.

Type, male, No. 19073, U. S. Nat. Mus.; Huadquina, Peru, 5,000 feet, July 26, 1911 (Yale Peruvian Expedition).

The specimen was kindly examined by Sir G. F. Hampson, who suggested the name here used.

This description should have appeared in my paper on the lepidoptera of the Yale Peruvian Expedition, but was accidentally omitted.

Pygarctia lorula, new species.

Front of head gray, crimson next the eyes and on vertex; collar and thorax white; abdomen crimson above, white below in the male, gray below in the female. Wings white above, slightly tinged with gray on costa of fore wing below. Expanse, 31–36 mm.

Cotypes, two males, two females, No. 19074, U. S. Nat. Mus.; Kerville, Texas (through Dr. W. Barnes); Sabinal, Texas, September (or April?) 10, 1910 (F. C. Pratt); San Antonio, Texas (J. Jermy).

Apantesis moierra, new variety.

Head and thorax black; abdomen crimson laterally, a broad dorsal dentate stripe; venter black. Forewing black; a row of flesh-colored

spots in the cell, and a small double one beyond it. Hind wing crimson, with a discal black spot and a broad, irregularly edged terminal border. Expanse, 35 mm.

Type, female, No. 19075, U. S. Nat. Mus.; Dallas, Texas, June 20, 1906 (W. A. Hooker).

Probably a variety of *figurata* Drury. It looks much like the female of *placentia* Smith & Abbot; but the wing seems shorter and broader, the crimson more orange tinted, the terminal border of hind wing continuous.

Family NOCTUIDÆ

Schinia navarra, new species.

Fore wing pale grayish, irrorated with darker; basal space darkly shaded; inner line pale, in-bent in the cell and slightly dentate on vein 1, followed by a dark cloudy claviform and a dark shade on the costa; orbicular large, round, clouded; reniform large, smoky black, with deep black edge and central pale arc; outer line pale, followed by a black edge, the subterminal space filled in with dark; subterminal line irregular and dentate, whitish; terminal line black, wavy; veins lined with pale. Hind wing pale whitish, veins dark; a large blackish discal mark and even outer border, the latter faintly cut by pale between veins 2-4. Expanse, 32 mm.

Type, male, No. 19076, U. S. Nat. Mus.; Cotulla, Texas, April 14, 1906 (F. C. Pratt). Also 14 specimens with additional localities, Victoria, Texas, April 4 (E. A. Schwarz); Sabinal, Texas, April 9, 1910 (F. C. Pratt); Llano, Texas, March 14, 1906 (F. C. Pratt); Rio Frio, Texas, May 12, 1910 (F. C. Pratt); San Antonio, Texas (J. Jermy); Los Angeles, California, 1889 (Z. Peabody); Fresno, California (E. A. Schwarz).

This species falls with *S. biundulata* Smith by Hampson's tables (Cat. Lep. Phal. B. M., iv, 81, 1903), but differs obviously. It has been identified by the late J. B. Smith and others as *Melicleptria scutosa* Schiff., from which it differs in the structure of the claws of the fore tibiæ, though somewhat similar superficially.

Pseudacontia (Leucocnemis) basifugens, new species.

Head, thorax, and base of fore wing soiled ocher-clayey; the rest of the fore wing black; fringe ocher-clayey; basal light area bounded by

the inner line, straight, a little oblique; median space nearly solidly black, the reniform and orbicular marked by light powderings; outer line faintly visible by light powdering, dentate-crenulate and excurved over cell; subterminal and terminal spaces less solidly black than the median space; subterminal line faint, pale, dentate, and irregular. Hind wing sordid yellowish white, dark along the veins and with a rather broad dark border; fringe white. Expanse, 28 mm.

Type, female, No. 19077, U. S. Nat. Mus.; Sabinal, Texas, November 28, 1910 (F. C. Pratt).

Family GEOMETRIDÆ

Craspedia mooraria, new species.

White, tinted with russet; lines russet brown; costa of this color for two-thirds; inner and median lines narrow, obscure, wavy, outer line similar but more distinct, dentate on the veins; subterminal line diffused; a row of distinct terminal dots; discal spot pale, small. Hind wing similar, lines more diffused; discal spot larger, white and surrounded by brown. Expanse, 15 mm.

Type, male, No. 19078, U. S. Nat. Mus.; Plantation Mon Repos, Georgetown, British Guiana (H. W. B. Moore).

Family PYRALIDÆ

Lygropia haroldi, new species.

Black, slightly lustrous; fore wing with pale yellow markings, consisting of a broad, inner, slightly oblique band, rounded off just below the costa, narrowly connected along the submedian fold to a narrow outer line, which is in-angled on submedian fold, out-angled on median vein and widens a little at costa; a small speck at tornus. Base of hind wing narrowly pale yellow, just including a dark spot in cell; narrow yellow marginal markings. Venter and legs pale yellow. Expanse, 19 mm.

Type, female, No. 19079, U. S. Nat. Mus.; Plantation Skeldon, Georgetown, British Guiana, November, 1913 (H. W. B. Moore).

Gonocausta sabinalis, new species.

Similar to *G. zephyralis* Led., but the fringe uniform dull brown, not pale yellow with contrasting dark patches; the basal pale patch of fore wing runs triangularly much farther out. Apical dark patch of hind wing erect. Expanse, 14 mm.

Type, female, No. 19080, U. S. Nat. Mus.; Sabinal, Texas, March 4, 1910 (F. C. Pratt).

Similar also to *Molybdautha (Eurrhyarodes) syllepidia* Hampson, but less than half the size and with the spots of fore wing well separated.

Artopsis nua, new species.

Fore wing ocher, irrorate with reddish; lines pale, the inner curved, the outer nearly straight. Hind wing more deeply reddish with a faint, outer, pale line. Expanse, 16 mm.

Type, male, No. 19081, U. S. Nat. Mus.; Lakeland, Florida, March, 1913 (C. N. Ainslie).

Very much like *Arta ochracealis* Walk., but larger and deeper colored, vein 10 present on fore wing on the stalk, close to 9.

Acallis mitchelli, new species.

Fore wing gray-brown, composed of dark scales densely irrorate on a very slightly violaceous, dull ocher ground; lines dark, with lighter edges of the ground color; inner line coarsely waved; outer line produced at the middle third and dentate; a trace of discal mark in the cell. Hind wing pale fuscous. Expanse, 19 mm.

Type, male, No. 19082, U. S. Nat. Mus.; Chisos Mountains, Brewster County, Texas, June 10, 1908 (Mitchell and Cushman).

Named for Mr. J. B. Mitchell, one of the collectors.

Aglossa baba, new species.

Fore wing densely powdered with blackish; lines broad, pale creamy, the inner dentate inward on submedian fold, the outer narrowing below, slightly produced on submedian fold, reaching the inner margin near tornus; a row of pale dots on costa; fringe pale. Hind wing pale creamy with narrow fuscous terminal line. Expanse, 20 mm.

Type, male, No. 19083, U. S. Nat. Mus.; Chisos Mountains, Brewster County, Texas, June 10, 1908 (Mitchell and Cushman).

A frail, narrow-winged species like *A. acallalis* Dyar.

Culladia mignonette, new species.

Silvery white; fore wing with two broad, ocher-yellow bands with dark brown edges; inner band slightly curved; outer band slightly oblique, projected subcostally to the margin with a slight indentation on the inner side. Expanse, 10 mm.

Type, No. 19084, U. S. Nat. Mus.; St. Jean, Maroni River, French Guiana, March, 1904 (W. Schaus).

DROSOPHILIDÆ WITH PARASITIC LARVÆ

(Diptera)

By FREDERICK KNAB

The two species of Drosophilidæ herein described have been reared from larvæ feeding upon other insects. One of them, *Gitonides perspicax*, has been reared no less than four times, independently, from larvæ found feeding upon mealy bugs (*Pseudococcus*). The second form, *Titanochæta ichneumon*, was reared from larvæ feeding upon spider's eggs. The form preying upon *Pseudococcus* proves to be closely related to the genera *Gitona* and *Acletoxenus*, which, it appears, have larvæ with similar habits. The European *Acletoxenus formosus* has been reared by Walker from larvæ preying upon *Aleurodes phillyreæ* Hal. on *Cratægus* and later by von Frauenfeld from the same host as well as from *Aleurodes jelineki* Frf. on *Viburnum*.¹ *Gitona distigma* of Europe, according to Kaltenbach, has been reared by Loew, and also by Scholz, from flower-heads of *Sonchus arvensis*.² As plant lice are known to occur in large numbers on the upper part of this plant (vide Kaltenbach, p. 397), there is every reason to believe that the larvæ of *Gitona* prey upon these. In *Gitona*, *Gitonides*, and *Acletoxenus* we have, then, three closely related genera with similar larval habits. The second new form, *Titanochæta*, is remarkable for the strong development of its macrochætæ and shows no close relationship with the three genera above discussed.

Gitonides, new genus.

Frons about one-third the width of head. Postvertical bristles convergent; three pairs of orbital bristles, inserted close to eyes, the anterior pair proclinate; ocellar bristles very stout, equaling orbital bristles in size, proclinate; inner vertical bristles strongly convergent, outer verticals divergent. Face not distinctly keeled, the oral margin not produced; cheeks rather broad, with a row of small bristles; vibrissæ well developed, strongly differentiated. Eyes large, naked. Antennæ rather stout, the third joint broadly leaf-like; arista long, microscopically ciliate. Thorax moderately convex; prescutellar bristles present; one pair of strong dorsocentrals, a second weak pair sometimes present; notopleural bristles at

¹ Walker. List Homopt. Ins. Brit. Mus., iv (1852), p. 1093, and Insecta Britannica, Diptera, vol. 2 (1853), p. 243 (as *Agromyza ornata*); v. Frauenfeld. Verh. zool.-bot. Ges. Wien, vol. 18, p. 150 (1868).

² Pflanzenfeinde, 1874, p. 396.

equal height; mesosternum with two strong bristles nearly at the same level. Abdomen depressed, broad basally, tapered toward apex. Wing rather broad, the tip rounded; costal vein evanescent beyond the end of the third vein, very finely and closely spinulate; subcostal vein basally distinct, distally indistinct and convergent with first vein; last section of fourth vein nearly parallel with third; posterior cross-vein slightly longer than last section of fifth vein, more than its own length beyond anterior cross-vein; anal cell closed. Legs slender; middle tibiæ with short and stout apical spur.

Type of genus, *Gitonides perspicax*, new species.

Gitonides is closely related to *Gitona* Meigen and *Acletoxenus* Frauentfeld. *Gitona* has much broader cheeks, the face distinctly keeled and the clypeus large and strongly projecting. *Acletoxenus* differs by the much narrower frons, the absence of ocellar bristles, the cheeks not visible in lateral view, and the costal vein distinctly developed to apex of fourth vein.

***Gitonides perspicax*, new species.**

Head and thorax gray pruinose with a slight brownish tinge. Abdomen banded black and whitish. Bristles and hairs black. Legs yellowish. Wings hyaline.

Female: Frons broad, very nearly one-third the width of the head, its sides straight and nearly parallel, brown, subpruinose; orbits narrow, pale gray pruinose; ocellar triangle small, terminating shortly beyond anterior ocellus, pale gray pruinose; orbital bristles coarse and long, inserted close to eye-margin within dark brown spots; ocellar bristles very large and long, proclinate and divergent; anterior half of frons with scattered small black hairs; on orbits, between orbital bristles, one or two setulæ; a double row of about nine black setulæ on frontal triangle, from vertex to anterior ocellus. Eyes large, somewhat higher than broad. Face short and broad, white pruinose, faintly keeled above, the oral margin not produced. Antennæ rather short, the first and second joints ochraceous, pruinose, with many black setulæ, the second with a single dorsal bristle; third joint light brown, compressed, rounded at tip; arista slender, long, microscopically ciliate, pale at base, black beyond. Mesonotum gray pruinose, with a few irregularly disposed, diffuse brown blotches, clothed with numerous black setulæ inserted in dark punctures, rather evenly disposed but not forming distinct rows, sparser on extreme margins. Scutel-

lum gray, irregularly mottled with brown, two pairs of strong marginal bristles, the apical pair cruciate. Pleuræ pruinose pale gray, with two incomplete, transverse, brownish black stripes, one beginning just below the humeri, the other crossing the middle of the mesopleuræ. Abdomen dorsally with the second segment gray pruinose, a blackish spot medianly and large ones basally toward sides; third, fourth, and fifth segments dull blackish, with broad pale gray pruinose apical and lateral margins, sixth and seventh segments mostly pale gray; surface of segments with coarse and rather sparse, evenly distributed black hairs, a submarginal row on fourth segment and a marginal row on fifth distinctly coarser and longer; venter pale. Legs pale ochraceous; middle and hind pairs with a dark spot on the femora ventrally close to apex, the tibiæ with a dark ring near base. Wings hyaline tinged with gray, the veins brown; anterior cross-vein well beyond tip of first vein; posterior cross-vein weakly sinuate, placed well outwardly, the last section of the fourth vein about one-third longer than the penultimate; third vein gently arcuate beyond the cross-vein. Halteres dark ochraceous.

Length: Body, about 3.5 mm.; wing, 3 mm.

Honolulu, Hawaii, July, 1907, reared from mealy bugs (*Pseudococcus*) on sugar cane (Otto H. Swezey) and from *Pseudococcus* common on shrubs and trees, sent by Wm. Weinrich, Jr., in 1902 (adults issued August 28, 1902, Bureau of Entomology); Manila, Philippine Islands, reared from larvæ feeding upon *Pseudococcus* (G. Compere); Philippine Islands, reared from *Pseudococcus* (California State Insectary).

Type, Cat. No. 19070, U. S. Nat. Mus.

This species strongly suggests in its general appearance *Drosophila repleta*. It appears to be widely distributed in the Orient. A series of poorly preserved specimens, collected by Prof. H. Maxwell-Lefroy at Pusa, India, is before me. In this species the male has a coarse serrate comb on the first three joints of the hind tarsi. It would also seem that the absence of the second weak pair of dorsocentral bristles is a peculiarity of the male, but more material is needed to determine this point.

Titanochæta, new genus.

Frons over one-third the width of head. Postvertical bristles long, cruciate; three pairs of orbital bristles, inserted near eye-margins, the anterior pair stout and proclinate, the median pair small and reclinate, the posterior pair very large, reclinate and situated about at middle of frons, behind it two small bristles; ocellar bristles very long and stout, procli-

nate; inner verticals very long and stout, erect, somewhat convergent; outer verticals stout, divergent; vibrissæ long and distinct. Eyes hairy. Antennæ short and stout; arista rather coarse, with five or six short dorsal rays, none ventrally. Notopleural bristles at equal height; prescutellar bristles absent; two pairs of very large dorsocentrals; mesosternum with two bristles, the one behind the middle long and stout, the other small and situated near upper margin. Wings broad and rounded; costal vein reaching to end of fourth vein; subcostal vein distinct basally, indistinct distally and convergent with the first vein; third and fourth veins subparallel, very slightly converging toward wing-tip; posterior cross-vein remote from wing-margin, shorter than last section of fifth vein; anal cell closed, the anal vein present. Legs with preapical bristle on front and hind tibiæ; middle tibiæ with apical and preapical bristle.

Type of genus, *Titanochæta ichneumon*, new species.

***Titanochæta ichneumon*, new species.**

Thorax and head light gray pruinose; frons above antennæ, face, basal portion of abdomen, coxæ, and legs pale yellow; bristles and hairs black.

Male: Frons over one-third the width of head, converging somewhat toward antennæ; ocellar triangle and orbits rather weakly differentiated, the former moderately large, not reaching halfway to antennæ, detached nearly to posterior margin; anteriorly the entire frons is pale yellow, posteriorly the frontal stripe becomes more grayish, while the orbits and ocellar triangle are gray pruinose; some scattered fine hairs on anterior third of frontal stripe. Eyes bright brown, with irregularly scattered, minute black dots and with stiff white hairs. Face yellowish, white-pruinose at margins, flattened, very weakly carinate, epistome shallowly emarginate; vibrissæ very large and stout, followed by a few bristles on the cheeks and a differentiated buccal bristle; cheeks rather narrow. Proboscis very short, fleshy. Antennæ short and stout, reaching slightly over halfway to oral margin, pale yellow, the third joint darker and dorsally infuscated; second joint with black hairs and a long black bristle; third joint thick, bluntly conical, with black arista bearing five well separated dorsal rays. Thorax convex, not as wide as the head and narrowed posteriorly, entirely pale gray pruinose; mesonotum with rather coarse and sparse, evenly distributed black hairs not forming regular series. Scutellum large, rather elongate, with rounded margin; two pairs of large

marginal bristles, the apical pair cruciate. Abdomen subcylindrical, the first two segments yellow, darkened centrally; third segment blackish above, with diffuse yellowish spot at apical angles, the following segments entirely black; vestiture of sparse, evenly distributed, fine black hairs; venter yellow. Wings hyaline, rather broad, rounded at apex; veins brown; costal margin finely and densely spinulate. Legs slender, pale yellow; anterior tibiae with moderate preapical bristle; middle tibiae with long apical and preapical bristles; hind tibiae broadened, with long delicate bristle well removed from apex.

Length: Body, about 2 mm.; wing, 1.8 mm.

Mountain View, Hawaii, reared from spider's eggs, in egg-sacks on sugar cane, August 22, 1912 (Otto H. Swezey).

Type, Cat. No. 19071, U. S. Nat. Mus.

This insect, by its pale blue-gray pruinose coloration, reminds one of the agromyzid genus *Leucopis*. The extraordinary development of the macrochaetae of the head and thorax gives this form a very anomalous appearance.

NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

(Continued from page 160)

Jurinella andicola, new species.

Length of body, 9.5 to 10 mm.; of wing, 9 to 9.5 mm. Two males and two females, Chosica, about 2,700 feet, May 8 and 9, 1913, on flowers of *Mikania* sp.; one female, Santa Eulalia, about 3,700 feet, July 5, 1913, on flowers of *Buddleia occidentalis*; and two males, Verrugas Canyon, about 5,400 feet, July 2 and 23, 1913, on same flowers.

Head except front light colored, with very pale golden pollen, facial plate less golden. Parafrontals blackish under the golden pollen. Frontalia, first two antennal joints, and lunula fulvous, third joint and arista brownish. Palpi yellow. All head pile golden, except black hairs of parafrontals. Mesoscutum and pleurae blackish, quite thickly light golden pollinose and of same shade as parafrontals, four narrow vittae of usual pattern. Scutellum and abdomen shining black, with a bluish luster; no

sign of pollen on abdomen, except a trace in oblique view on sides of anal segment. Legs black, tibiae sometimes slightly reddish-brown. Wings well infuscated throughout, both scales of tegulae with same shade of infuscation.

The first two arisal joints are strongly elongate in both sexes, and are about equal. Last two antennal joints practically equal in both sexes. Palpi widened and flattened apically. Claws of male greatly elongate. Intermediate abdominal segments with discal macrochaetae in both sexes.

Type, TD4148 (fly, straplike uterus, black maggots). The cotype female is TD4147.

This species resembles *Archytas andicola* T. of same localities.

Tribe DEJEANIINI

Dejeaniops Townsend.

Differs from *Adejeania* as follows: Eyes thickly pilose, third antennal joint subtruncate and widened apically, first abdominal segment without other than about two lateral macrochaetae and those of ventral plate, only one marginal pair of scutellar bristles, abdomen and whole form narrowed, two sternopleural and three postsutural bristles, palpi and proboscis much longer and more slender. Description is of female only.

Second arisal joint fully twice as long as wide. Parafrontals, parafacials, and cheeks with fine black hairs. Proboscis slender, when extended two and one-fourth times head-height, the part below geniculation about one and seven-ninths times head-height. Palpi almost as long as proboscis below geniculation, about one and one-half to one and two-thirds times head-height, narrowed and slender. Only one postacrostichal bristle. Front tarsi of female distinctly but not greatly widened. Scutellum with anterior transverse row of spines practically absent, the forward half being bare of macrochaetae except on lateral margin. Second abdominal segment in middle with a marginal row of ten very closely placed spines, bare between these and the three lateral spines; the outer spines of the middle marginal ones are longest and the median ones shortest, the intermediate ones gradating successively longer outwardly. Third segment with six marginal spines in middle, the outer ones longest and strongest, the inner ones shortest; a slight interruption between these and the continuation of marginal row on sides, about eight large and small on each side in continuous row extending on sides of venter. Anal segment with two transverse rows of spines in front of the apical bristles and bristly

hairs, more than front half of segment without spines; the segment narrowed behind and very faintly emarginate. Ventral plates of the four segments carry each a row of six spines, except that anal has only five, and basal has seven with an extra pair in front of them.

Reproductive habit, almost certainly leaf-larviposition of colored maggots.

Type, *Dejeaniops ollachea* T.

This genus was briefly characterized in *Psyche* for June, 1913, pp. 103-105. The above is a fuller description of the genus, and the following is a more detailed description of the species.

***Dejeaniops ollachea* Townsend.**

Length of body, 11 mm.; of wing, 10.5 mm.; of proboscis, 6 mm.; of palpi, 4.5 mm. One female, *Ollachea*, about 9,500 feet, February 2, 1910, on flowers of euphorbiaceous shrub.

Head pale yellowish, faintly golden pollinose; palpi deep rust-yellowish; antennae pale yellowish-brown or very pale brick-reddish, arista black. Parafrontals and thoracic scutum concolorous, brownish-olive and pollinose; thorax with four narrow vittae, scutellum pale yellowish-brown. Abdomen soft black, with clear light yellow on sides of anterior two-thirds, the two colors disposed as follows by segments: First black in middle, the black widened in front and evenly narrowed to hind margin, rest of segment yellow; second with only broad median vitta black, all rest yellow; third with median vitta widening behind and posterior corners black, latter continuing broadly on whole hind margin of venter of segment including the ventral plate; anal wholly black above and below. Legs concolorous with palpi, of a deep rust-yellow except that femora are blackish or brown on all but apices. Wings evenly smoky, but not deeply so; both scales of tegulae smoky and microscopically thickly black-pubescent.

***Eudejeania huascarayana*, new species.**

Length of body, 17 mm.; same to end of abdominal spines, 19 mm.; of wing, 17 mm. One male, eastern base of Huascaray Ridge, about 7,000 feet, September 22, 1911, on foliage.

Whole head pale dusky-golden or pale old-gold pollinose, epistoma smoky-blackish, parafrontals dusky with smoky-golden pollen, frontalia and lunula velvet-black, antennae black. Lunula and ocellar area faintly golden pollinose, also first two antennal joints; even frontalia with a

golden sheen in oblique view. Palpi soft deep black. Occipital pile golden, parafacial and parafrontal hairs black. Entire thorax, scutellum, and abdomen soft deep black; the humeri and pleurae very faintly and thinly pollinose, hardly noticeable; the abdomen more shining. Two sternopleural bristles, two weak postsutural, no acrostichal whatever. Thorax and abdomen with very fine black pile. Legs deep rust-yellow or yellowish-red, tibiae a shade lighter, tarsi deep clear yellow with only a faint tinge of rust at most. Wings quite evenly infuscated, a little more deeply tinged near base; tegulae deep soft smoky-black.

Trichodejeania verruga, new species.

Length of body, 12 to 14 mm.; of wing, 11 to 12 mm. Fifteen specimens, Verrugas Canyon, about 4,500 feet, on flowers of *Buddleia occidentalis*, two males and five females, July 9 and 10; and three males and five females, July 23 and 24, 1913.

Whole head and pleurae set pale golden pollinose, mesoscutum and parafrontals old-gold pollinose, four narrow brown vittae of usual pattern on thorax, frontalia deep fulvous, first antennal joint and lunula fulvous, second joint brownish with fulvous at tip, third joint and arista dark brown. Palpi yellow on basal third, rest soft light brown, with longer bristles on inferior proximal edge. All pile of head deep golden, except only the short black hairs of parafrontals. Scutellum and legs wholly light rust-yellow. Abdomen deep rust-yellow, including pile which is like bristles behind; first segment with blackish triangle in middle, invading front edge of second segment on median line; third segment with a similar but slightly larger median triangle, the sides of both these being concave; anal segment with a much larger triangle, whose sides are convex, the narrow posterior point fading in the crease between the buttocks. Whole venter light rust-yellow, the anal segment blackish except narrow edges. Wings rather lightly infuscate throughout, bases very faintly yellowish; both scales of tegulae light rust-yellow, the disk of hind scale faintly fuscous, due to a very microscopic short black pubescence.

Type, TD4171 (fly, straplike uterus, black maggots). Among the cotypes is TD4169.

Eulasiopalpus Townsend.

This genus was characterized in *Psyche* for June, 1913, pp. 103-105. It differs from *Lasiopalpus* in eyes being bare, third antennal joint

convex on front border and rounded apically, proboscis slender and longer than head-height, parafacials hairy.

Type, *Eulasiopalpus albipes* T.

***Eulasiopalpus albipes* Townsend.**

Length of body, 14 mm.; same to end of abdominal spines, 15.75 mm.; of wing, 14 mm. One male, eastern base of Huascaray Ridge, about 7,000 feet, September 22, 1911, on foliage.

Whole head smoky-silvery pollinose, the cheek-groove area broadly brassy-smoky, the epistoma blackish, parafrontals darker, frontalia and third antennal joint soft black; lunula, first two antennal joints, arista, and palpi shining jet-black. Occipital pile brassy-gray, parafacial and parafrontal pile black. Entire thorax, scutellum, abdomen, and femora black, the abdomen shining, the humeri very faintly and thinly pollinose, extending still less perceptibly on scutum and leaving four indistinct black vittae. A faint thin sheen of pollen shows on the gum of abdomen in oblique view. Tips of femora pale, tibiae light yellowish with a faint brownish or dusky tinge, tarsi yellowish-white. Macrochaetae of tibiae black, spurs and spines of tarsi concolorous with latter. Wings evenly infuscated, both scales of tegulae deep smoky-black.

This species bears a striking resemblance to *Eudejeania huascarayana* of the same region, taken practically in company with it.

***Eulasiopalpus corpulentus*, new species.**

Length of body, 12 to 15 mm.; of wing, 11.5 to 13 mm. Twenty-four specimens, Verrugas Canyon, about 5,400 feet, on flowers of *Buddleia occidentalis*, four males and one female, June 25; one male and one female, July 2; eight males and two females, July 9 and 10; four males and one female, July 23 and 24; and two males, August 6, 1913.

Head and pleurae shining yellow-fulvous, very faintly silvery pollinose, more so on orbital region before and behind, cheeks and epistoma practically devoid of pollen. Parafrontals brownish-rufous, practically concolorous with frontalia; first two antennal joints fulvous, nearly same shade as clypeus; third joint brownish-fulvous, with a faint silvery bloom; arista dark brown. Sometimes the clypeus and first two antennal joints are nearly as dark as third joint, and the frontalia are sometimes deep fulvous; also the second antennal joint may be darker than either clypeus or third joint. Palpi fulvous-yellow, the cilia black. Occipital pile brassy-gray

to grayish, all other head hairs black. Proboscis largely brownish-red. Humeri, rather broad lateral and hind borders of mesoscutum rufous-yellow, rest of mesoscutum greenish-black; vittae very faint, middle ones linear, outer ones heavy, all much abbreviated. Scutellum and abdomen deep bright rufous throughout, the venter shading lighter. Femora slightly lighter than venter, slightly darker than pleurae; tibiae deep bright yellow on outside, rest rust-yellow with fulvous short pile, latter most thickly placed on front aspect of front tibiae and hind aspect of hind tibiae, tibial spines black; tarsi wholly deep yellow, with fulvous hairs and short spines. Wings deeply infuscated throughout, narrowly fulvous at extreme roots on veins; both scales of tegulae watery-whitish, borders of front scale fuscous.

Type, TD4172 (fly, straplike uterus, black maggots). Among the cotypes is TD4167.

Eulasiopalpus obscurus, new species.

Length of body, 12 to 14 mm.; of wing, 11.5 to 12.5 mm. Ten males and one female, Matucana, about 8,000 feet, August 16, 1913, on flowers of a shrubby mint.

Differs from *E. corpulentus* in being decidedly more melanic, so much so that it can not be considered a subspecies of that form. Head and thorax decidedly blackish, with a faint greenish tinge above, all very thinly silvery pollinose; cheek grooves and peristomal borders fulvous-yellow. Frontalia soft brown; first two antennal joints, lunula, and arista shining brown; third joint dark brown, with a faint grayish bloom. Sometimes the first two antennal joints are quite rufous. Palpi fulvous-yellow, cilia black. Thoracic vittae of same pattern as in preceding species, but a little more distinct. The humeri and lateral borders of mesoscutum are at best faintly brownish-rufous, and scutellum is conspicuously so. Abdomen is deep dark rufous, front borders and median triangles of segments shining dark brown to black, a very thin sheen of silvery seen in oblique view. Venter blackish with silvery bloom, except edges and ventral plates rufous. Femora light rufous; tibiae slightly lighter but bright yellow on outside, tarsi wholly bright light yellow, spines and hairs same as in preceding. Wings very deeply smoky throughout, almost black; hind scale of tegulae watery-white, front scale rather fuscous-watery with deep black narrow border.

Type, TD4176 (fly, straplike uterus).

Eulasiopalpus niveus, new species.

Length of body, 13 to 14 mm.; of wing, 13 to 14 mm. Two males, one Verrugas Canyon, about 5,400 feet, July 23, 1913, on flowers of *Buddleia occidentalis*; the other Matucana, about 8,000 feet, August 16, 1913.

This species has practically the identical coloring of *Epalpus niveus*. Cheeks and epistoma are faintly yellowish with very thin silvery pollen. Clypeus, parafacials, parafrontals, and orbits silvery, the occiput silvery-cinereous. Parafrontals black under the pollen. Palpi, tibiae, and tarsi yellow. Antennae brown, junction of second and third joints subfulvous, sometimes first two joints wholly fulvous-brownish. Frontalia brown. Whole thorax blackish, with silvery bloom. Scutellum brown to dark brown, also silvery. Abdomen colored as in *E. niveus*, except only that the median vitta-like black is not truncate posteriorly but terminates in a point on anal segment, in front view dividing the silvery-white of anal segment; the black of third segment is subdiamond-shaped rather than subquadrangular; the silvery-white of second and third segments is deeply constricted by the black entering on each side. Venter wholly black, with hardly a trace of bloom. Femora fulvous, basal half of middle and hind femora and basal third of front ones brown to dark brown. Wings of exactly same deep infuscation; tegulae white, but the narrow border of front scale brown or blackish.

Type, the Verrugas Canyon specimen.

Subfamily LARVAEVORINAE

Tribe MICROPALPINI

Vibrissomyia lineata oroyensis, new subspecies.

Length of body, 10 to 12 mm.; of wing, 8.5 to 9.5 mm. Five females and one male, Oroya, over 12,000 feet, March 6, 1913, on short herbage.

Differs from *lineata* T. in third antennal joint being conspicuously shorter than second in both sexes, and vibrissae distinctly longer than peristomal bristles; in both of which characters it agrees with *Andinomyia* as distinguished from *Vibrissomyia*, but the totality of characters throws it unmistakably in the latter genus. The cheeks are not as wide as eye-height, being considerably less in both sexes. Front tarsi of female are strongly flattened and widened, which character was omitted from

description of *Vibrissomyia*. Agrees quite well in coloration with description of *lineata*, but the following slight modifications may be noted: Scutellum rufous to brick-fulvous, except only narrow basal margin. Female abdomen wholly black on sides without red, or only slightly reddish on first two segments; that of male broadly red on second, posterior half of first, and anterior half of third segments, the red being a shade or two deeper than that of scutellum and more highly polished.

Type, TD4124 (fly, straplike uterus, black maggots). TD4117 is a cotype.

This form necessitates the modification of the generic diagnosis of *Vibrissomyia* to agree. *Andinomyia* still stands distinct on its much more elongate head, wide parafacials, elongate cheeks, very long proboscis, absence of strong bristle-armature of anal segment. The present is an example of subspecific evolution in anatomical and ordinarily generic-value characters, without departing from the parent stock in type of coloration. One would be inclined to consider it a distinct species representing a subgenus of *Vibrissomyia*, were it not for the close agreement in coloration with *lineata*, and perhaps that conception is correct rather than the present. It affords another illustration of the difficulties that beset the presentation of a true taxonomic picture in these flies.

(To be continued.)

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NEW DATA AND SPECIES IN SIMULIIDÆ

(Diptera)

By FREDERICK KNAB

The theory that Simuliidæ are the agents for transmitting pellagra has awakened wide interest in this group of blood-sucking flies and has caused them to be more extensively investigated. Considerable advance has been made in our knowledge of the group systematically, but much yet remains to be learned. Contributions, under existing circumstances, must be necessarily fragmentary, but it is hoped that such will lead to a revision of revisions.

Simulium pulverulentum, new species.

Female: Occiput, frons, and face gray pruinose; frons broad above, greatly narrowed to near the antennæ. Antennæ short, the two basal joints dull ferruginous yellow, the others blackish, clothed with pale pubescence, the tip pointed. Scutum almost uniformly blackish with gray pruinosity, an ill-defined, straight, median black line extending the entire length, and outwardly broader, hardly perceptible, sinuate stripes of the usual conformation; vestiture of small, hair-like silvery scales, rather dense and nearly uniformly distributed. Scutellum broad, short, bluntly rounded, concolorous with the mesonotum and with longer, transversely directed, silvery hair-like scales. Postnotum blackish. Pleuræ dark gray pruinose, the pteropleuræ paler. Abdomen subcylindrical, dull black, without marked plications, the basal segment paler. Legs black and white, the small, appressed hair-scales on femora and tibiæ pale and shining; anterior coxæ, trochanters, and bases of all the femora dull ferruginous yellow; anterior tibiæ white on the basal two-thirds, a blackish ring close to base, the tarsi wholly black and with the first joint long and rather slender;

middle tibiæ whitish at base and with a whitish ring at basal third, the first tarsal joint white on the basal two-thirds; hind tibiæ broadly whitish at base, a whitish ring before the middle, the first tarsal joint white on the basal two-thirds, the second with a white ring at base. Claws with a minute acute tooth close to base. Wings hyaline, a predominately reddish iridescent spot in the anal field; venation normal, the thick veins yellowish brown, spines and setulæ black. Halteres with dark stem and white knob.

Length: Body about 1.8 mm., wing 2.8 mm.

Punta Gorda, British Honduras (J. D. Norton).

Type, Cat. No. 19111, U. S. Nat. Mus.

Described from a series of 35 specimens in poor preservation. The species is remarkable for the peculiar double annulation at the bases of the tibiæ and the almost uniformly gray mesonotum rather densely clothed with evenly distributed hair-like scales.

***Simulium rubicundulum*, new species.**

Female: Occiput blackish gray pruinose; frons moderately broad, narrowed very slightly toward antennæ, pale gray pruinose, with scattered fine black hairs. Antennæ stout, blunt at tip, the first two joints yellow, the others brownish gray, all strongly whitish pruinose. Scutum tinted dull reddish beneath a dense pale gray pruinosity, a narrow black median line becoming obsolete on anterior half, a pair of sinuate bare black stripes of uniform width throughout and forming the usual lyre-pattern, extending from anterior margin to the broad black shade in front of the scutellum, the black shade extending forward along lateral margins nearly to humeri; vestiture of small, very slender, white hair-scales not disposed in groups or rows. Scutellum narrow, roundedly triangular, reddish, clothed with transverse, long and slender white hair-scales. Postnotum rather narrow and elongate, blackish, strongly white pruinose. Pleuræ blackish gray pruinose, the propleuræ and anterior coxæ pale ochraceous yellow. Abdomen subcylindrical, dorsally dull black, the margins of the segments gray; venter pale gray. Legs ochraceous, marked with black and white. Fore legs with the femur yellow, the tibia with a narrow subbasal black ring and the apical third black; tarsi wholly black. Middle legs with the femur yellow, blackish at apex; tibia with a blackish subbasal ring and the apical portion broadly blackened; tarsus with the first joint white, its apical third black, the second joint black with broad white basal ring,

the last three joints all black. Hind legs with the femur yellow, blackened toward apex; tibia mostly black, the base and an incomplete broad ring before middle pale; tarsi with the first joint whitish, its apical third and the lower margin blackened, the second joint white basally, black on apical half, third joint narrowly pale at base, the last two joints wholly black. Claws with a stout tooth near base. Wings hyaline, the venation normal; thick veins ferruginous yellow; no iridescent spot in anal field. Halteres pale yellow, infuscated at base.

Length: Body about 3 mm., wing 4 mm.

Córdoba, Mexico, December 17, 1907, one female (F. Knab); Las Vegas Hot Springs, New Mexico, August 7, one female (H. S. Barber).

Type, Cat. No. 19112, U. S. Nat. Mus.

The reddish shade of the mesonotum is not strong and is further obscured by the strong gray pruinosity; in certain lights the ground-color appears very dark and the markings described above as black stand out strongly white-pruinose. The specimen taken in December at Córdoba was no doubt a straggler out of season.

The species just described agrees closely in coloration, size, and structure with *Simulium rubrithorax* Lutz, which occurs in southern Brazil and of which two females are before me, kindly transmitted by Dr. Lutz. This latter species has the terminal joint of the antennæ longer and more tapered; the frons is slightly narrower and almost parallel-sided; the hairs on the frons are coarser and disposed in four rows, of which the outer ones are very obvious. In *rubicundulum* the hairs of the frons are finer and scattered over the surface without the least tendency to form rows. Another case of vicarious closely similar species, that of *Simulium esco-meli* and *S. bivittatum*, has already been pointed out (Proc. Biol. Soc. Wash., xxvii, 1914, p. 83).

***Simulium trivittatum* Malloch.**

Simulium distinctum Malloch, Proc. Ent. Soc. Wash., xv, 133 (1913).

Simulium trivittatum Malloch, Tech. Ser. 26, Bur. Ent., 29, 30 (1914).

Simulium distinctum Malloch, Tech. Ser. 26, Bur. Ent., 25, 29, 30 (1914).

Examination of the type material described under *distinctum* and *trivittatum* leaves no room for doubt that the two are conspecific. The type of *trivittatum* (female) and the two female paratypes of *distinctum* agree in every detail. Contrary to what is indicated in Technical Bulletin 26, page 29, the abdomen of the type specimen of *trivittatum* is most distinctly marked, showing three series of black spots on a pale

ground. This specimen was evidently captured when fresh and still unfed. The female *distinctum* are older specimens that had fed and are partly crushed; in consequence the abdominal markings are obscured, although still clearly discernible in one of the specimens. The name *distinctum* had already been applied to a Brazilian species of *Simulium* by Lutz in 1910; *trivittatum* therefore supersedes it in the present case.

Parasimulium Malloch.

Tech. Ser. 26, Bur. Ent., 24 (1914).

The genus *Parasimulium* was founded on a single specimen stated to be a female. The type of *Parasimulium furcatum* Mall. is a male, instead of a female, as already appears from the description through the indication of enlarged facets on the lower part of the eyes, a common and well-known male character in certain families of Diptera. The male clasping organs are plainly visible in the specimen and furthermore are yellow, contrasting conspicuously with the dark body-color. Thus the genus is erroneously conceived. The specimen shows some striking peculiarities and probably the genus can be reestablished on other characters when the female is discovered.

SOME NEW CHALCIDOIDEA

By J. C. CRAWFORD

Both of the following new species of the genus *Tetrastichus* belong to the section which bears only one bristle on the submarginal vein.

Tetrastichus compsivorus, new species.

Female: Length 1 mm. Black, the femora dark brown, the tibiae lighter, the middle and hind tarsi whitish; first joint of funicle distinctly shorter than pedicel, the second about as long as the first, the third shorter, hardly longer than broad; club about as long as joints 1 and 2 of funicle; mesonotum sericeous, the median groove on mesoscutum and discal pair on scutellum faint; propodeum short, the medial carina no longer than metanotum; wings brownish; submarginal with one bristle.

Male: Length 0.87 mm. Similar to the female except for secondary sexual characters.

Type locality; Chickasha, Okla.

Host: Eggs of *Compsus auricephalus*.

Type specimen: Cat. No. 19067, U. S. Nat. Mus.

Described from one of each sex reared by E. G. Kelly and recorded under Bureau of Entomology, Webster No. 12708, A1832.

In Gahan's table this runs to couplet 4 but runs out there, owing to the first joint of funicle being shorter than pedicel.

Tetrastichus agrili, new species.

Female: Length 3 mm. Green, the abdomen distinctly longer than the head and thorax combined; head and mesonotum finely lineolate, the lineolations on the mesoscutum and scutellum longitudinal; antennæ brown, the scape yellowish testaceous; joints of funicle elongate, successively decreasing in length, the last about as long as the pedicel, club about as long as first joint of funicle; median groove on mesoscutum very plain, distance between dorsal pair of grooves on scutellum compared to length of scutellum is as 4:15; median and lateral carinæ on propodeum strong; the lateral ones at rear of propodeum turn outwardly and run to lateral margins, so that the spiracles appear to be situated in depressions; between lateral carinæ the propodeum is covered with crowded very shallow punctures; laterad of these carinæ the surface appears obscurely roughened; wings hyaline, submarginal vein with one bristle; femora, except tips, dark brown with a greenish lustre, tibiæ and tarsi testaceous; abdomen slender, sharply pointed at tip.

Type locality: Geneva, New York.

Type specimen: Cat. No. 19068, U. S. Nat. Mus.

Host: *Agrilus sinuatus*.

Described from four females received from P. G. Parrott.

This species resembles *T. productus* Riley, which is smaller, the lateral folds of propodeum are not carinate and the surface laterad of them is distinctly punctured; the spiracles do not appear to be situated in depressions but have just caudad of them an elevated triangular punctate area; the distance between dorsal grooves on scutellum compared to the length of scutellum is as 4:9.

Eupelminus swezeyi, new species.

Female: Length about 2 mm.; sheaths of ovipositor exposed 0.3 mm. In color varying shades of blue, green, and purple; face below antennæ purple, inner orbits green, between purple; face with indistinct transverse lineolations above insertion of antennæ, below finely reticulated on sides, the sculpture of clypeus finer; scape testaceous, rest of antennæ brown,

with a green lustre; ring joint subquadrate, first joint of funicle longer than pedicel; first three joints of funicle subequal in length, the following successively decreasing in length; pronotum purplish, the posterior margin blue; tuft of hair on dorsum of pronotum long (0.25 mm.), the hairs numerous, dark brown; middle lobe of mesonotum, except caudad, scutellum, and inner margin of parapsidal areas bronzy, covered with thimble-like punctures; apical portion of middle lobe smooth, polished, purple and green; pleuræ longitudinally striate, purplish; rudiments of wings very small, inconspicuous; legs brown, basally with a slight purplish lustre, coxæ more purplish; abdomen brown, with a purplish lustre, basally green.

Habitat: Kaimuki, Oahu, Hawaiian Islands.

Described from three females sent by Mr. O. H. Swezey with the record "Probably parasitic on the *Isosoma* (In Johnson grass)."

Type specimen: Cat. No. 19092, U. S. Nat. Mus.

This species is easily recognized, in addition to other characters by the excessive reduction of the wings and by the strong development of the tuft on the pronotum.

***Geniocerus xanthopus* (Nees) Ratz.**

This species appears to be very commonly reared from the pupæ of *Dendrolimus pini*. The collections of the Museum possess a series from this host reared by Mr. K. Eckstein at Eberswalde, Germany.

In Dalla Torre's catalogue of Hymenoptera this species, which was described in the genus *Eulophus*, is recorded under the genus *Entedon*.

***Dirhicnus alboannulatus* (Ratzeburg).**

Pteromalus alboannulatus Ratz., Ichneum. d. Forstinsekt. III, 1852, 231.

The Museum has a series reared from the pupæ of *Panolis griseovariegata* by Mr. K. Eckstein at Eberswalde, Germany.

NEW MUSCOID FLIES, MAINLY HYSTRICIIDÆ AND PYRRHOSIINÆ FROM THE ANDEAN MONTANYA

By CHARLES H. T. TOWNSEND

(Continued from page 176)

Eutrichophora, new genus.

Approaches both *Vibrissomyia* and *Andinomyia* in general external characters. It is one of the dolichocephalic puna forms from 12,000 feet and over, but the head is only moderately elongate. Female front at vertex twice eye-width, that of male one and two-thirds times same. Long pair of proclinate divergent ocellar bristles. Frontalia very wide, equal in width anteriorly and posteriorly, about width of distance separating vibrissae, same in both sexes. Female with two strong proclinate orbital bristles, male with none. Male with a triple row of bristles on parafrontals, female with a double row inside orbitals. One to three or more facio-orbital bristles, parafacials about as wide as long and clothed with sparse bristly hairs. Second and third antennal joints nearly equal in female; third noticeably longer in male, about one and one-third times second. First arisal joint short, second slightly elongate. Proboscis long and slender, fully one and one-half times head-height; no palpi, neither bristlets nor other vestige. Cheeks about three-fourths eye-height in male, a little less than that in female. Epistoma about as long as second antennal joint, normally set at angle of about 45° to plane of clypeus. Third antennal joint quite narrow in both sexes, nearly straight on both front and hind edges, gently rounded apically; arista short, one and one-fourth times third antennal joint. Vibrissae well removed from oral margin, conspicuously longer than peristomal bristles. Eyes bare. Length of peristomal profile not as long as height of occipital, longer than height of facial, equal to length of frontal.

On extracephalic characters the genus differs from description of *Vibrissomyia* by the scutellar bristles being confined to two strong lateral pairs, weaker decussate apical pair, and three or four still weaker discal or subdiscal. Front tarsi of female scarcely widened.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Eutrichophora punensis*, new species.

The frontal, facial, oral, and other characters preclude the possibility of considering this form a subgenus of either *Vibrissomyia* or *Andinomyia*.

Eutrichophora punensis, new species.

Length of body, 11 mm.; of wing, 9 mm. Two males and one female, Pachacayo, about 12,000 feet, March 26 and 27, 1913, on flowers of *Eupatorium* sp.

Head silvery-white, cheek grooves light honey color in direct view, parafrontals blackish under the silvery pollen, frontalia brown except front border which is concolorous with lunula, latter fulvous; antennae and arista blackish-brown, first two antennal joints reddish in female. Occipital hairs gray, all other head hairs black. Thorax, scutellum, abdomen, and legs black, first two thinly silvery pollinose, four faint heavy vittae on mesoscutum; abdomen thinly silvery on all but anal segment, but more noticeable as broad front borders to intermediate segments; anal segment copper-cinereous pollinose. Wings nearly clear, faintly tawny at base; tegulae white.

Type, TD4132 (fly, straplike uterus, black maggots).

Epalpodes equatorialis rimacensis, new subspecies.

Length of body, 8 to 10 mm.; of wing, 6.5 to 9.5 mm. Seven females and ten males, San Cristobal Hill, Lima, about 1,000 feet, September 22 to 30, 1912, on herbage; and two females, Matucana, 8,000 feet, September 8, 1912, on foliage.

Differs from *equatorialis* T. as follows: Parafacials slightly narrower; second abdominal segment without continuous marginal row of macrochaetae. Fifth thoracic vitta hardly distinguishable. Black of third segment is more pronounced, extending outward posteriorly along margin; silvery-golden of anal segment is proportionately broader, diminishing the darker areas, in the Matucana specimens covering nearly whole segment and leaving only a pair of reddish-brown spots on hind margin. The pollen of median vitta spreads narrowly along front margin of second and third segments for a considerable distance in the Matucana specimens, and sometimes in the others but less so. Both scales of the tegulae are normally white, sometimes varying to watery-tawny, the front scale being edged with delicate black hairs.

Type, TD4151 (fly, straplike uterus), San Cristobal Hill.

It is to be noted that the San Cristobal Hill specimens run much smaller and are less conspicuously and extensively pollinose than the Matucana specimens, thus demonstrating the efficiency of circumscribed environment for producing noticeable variations in this region.

Tribe LARVAEVORINI

***Peleteria robusta marmorata*, new subspecies.**

Length of body, 8.5 to 11 mm.; of wing, 6 to 8.5 mm. Chosica, about 2,700 to 3,000 feet, six males and three females, July 21, 1912, on flowers of *Asclepias curassavica*; five females and two males, May 8 and 9, 1913, on flowers of *Mikania* sp.

Head very pale golden pollinose, the occiput and parafrontals with dark ground color showing through, the rest with light ground color, the facial plate more silvery. Frontalia light to dark fulvous, lunula and first two antennal joints fulvous to rufous, third joint and arista brown except sometimes base of former. Palpi brownish-yellow. Occipital pile pale golden; cheek, parafacial, and frontal pile black. Humeri concolorous with parafrontals. Rest of thoracic scutum and scutellum shining blackish with a faint greenish tinge, very thinly covered with a grayish or silvery pollen, the usual vittae very indistinct. Sometimes the scutellum is slightly rufous apically. Abdomen showing a marmorate effect, the anal segment wholly rufous in female but often largely blackish in male, with pale golden pollen; other segments wholly shining black, covered with a thin silvery-white or bluish-white coat. Legs black, the front femora faintly golden to silvery pollinose on outside. Wings faintly infusate, both scales of tegulae white.

Closely allied to *P. robusta* Wd., from which it differs principally in the decidedly darker coloration of parafrontals, scutellum, and wings, and is quite certainly only a subspecies thereof. Belongs in *Peleteria* as restricted, on following characters: Eyes bare, parafacials hairy, two facio-orbital bristles, second antennal joint longer than third, first arisal joint elongate, both sexes with orbital bristles, palpi long and filiform, no ocellar bristles, third antennal joint strongly convex on front edge, front tarsi of female conspicuously widened, first abdominal segment with no median macrochaetae but second with median marginal pair.

***Pseudoarchytas*, new genus.**

Differs from *Archytas* in second antennal joint being longer than third; third joint not strongly convex on front edge, the front and hind edges being practically same; palpi more club-shaped, not so flattened apically; arista proportionately much shorter; front tarsi of the female hardly wider than the others. The first arisal joint is not elongate, the eyes are bare, parafacials hairy. No facio-orbital bristles, female with orbital bristles

(male unknown). No ocellar bristles. First two abdominal segments sometimes with no macrochaetae whatever, not even at sides, but usually a median marginal pair on second and a very short lateral marginal on both first and second. Long heavy spines on outside of middle tibiae. Cheeks of female about three-fifths of eye-height, front at vertex about one and one-half times eye-width, parafacials nearly or quite as wide as clypeus.

Reproductive habit, probably leaf-larviposition of colored maggots.

Type, *Pseudoarchytas marmorata*, new species.

This genus bears a strong resemblance, both superficially and in most external characters, to the *Cnephalia* group, but is readily distinguished therefrom by the absence of ocellar bristles, while the reproductive characters show that it is allied to *Archytas*.

***Pseudoarchytas marmorata*, new species.**

Length of body, 12 to 13 mm.; of wing, 9.5 to 10 mm. Four females, Chosica, 2,700 to 3,000 feet, two on flowers of *Baccharis* sp., January 20, 1913; two on flowers of *Mikania* sp., May 8 and 9, 1913.

The general coloring of this species is almost the same as that of *Peleteria marmorata*, the only differences being that the thorax is a little more noticeably silvery pollinose, leaving the vittae more distinct; the wings are slightly less infuscate, being practically subhyaline; the parafrontals and head in general are rather more lightly colored, the parafrontals being quite thickly golden pollinose; and the parafacial and cheek pile is golden as well as the occipital. The palpi are fulvous to rufous. The scutellum is rather noticeably reddish except base. The basocostal area of wings is smoky-yellowish.

Type, TD4226 (fly, uterus, colored maggots). The uterus seems to be straplike, but was dissected out in a dried state, unfavorable to positive diagnosis. The characters of the cephalopharyngeal skeleton of the first-stage maggot indicate relationship with *Archytas* rather than with the *Pyrrosiinae*.

***Archytas andicola*, new species.**

Length of body, 9.5 to 10.5 mm.; of wing, 7.5 to 8.5 mm. Three males and two females, Chosica, about 2,700 feet, May 8 and 9, 1913, on flowers of *Mikania* sp.; one female, Verrugas Canyon, about 5,400 feet, June 25, 1913.

Clypeus silvery-white, cheeks with faint brassy bloom extending on

parafacials, parafrontals dark greenish covered with brassy pollen in both sexes. Frontalia pale fulvous, first two antennal joints and base of third rufous, rest of third joint and arista brown, palpi yellow to fulvous-yellow. All head pile pale brassy except the black hairs of parafrontals. Thorax, pleurae, and scutellum dark greenish, rather shining, brassy pollinose in both sexes; five vittae of usual pattern. Scutellum more or less rufous under the green sheen and the pollen. Abdomen polished metallic blue-black, the anal segment of both sexes with faint silvery or brassy bloom in oblique view but not directly visible. Legs black. Wings lightly infusate, faintly yellowish on base. Both scales of tegulae deep fuscous to fuscous-watery and tawny. Scutellum with three strong marginal macrochaetae on each side, the middle one a little shorter than the others; the weak decussate apical pair present, with the short erect pair in front of them.

Type, TD4149 (fly, straplike uterus, black maggots). The cotypes include TD4146.

This form differs in the scutellar bristles from *A. incasana* T. of the north Peruvian coastal plains, but agrees in this character with the form of *incasana* occurring in the central coastal-foothill region. It may prove to be a subspecies, but is not so indicated at present.

A NEW CUTEREBRA FROM PANAMA

(Diptera)

By FREDERICK KNAB

Cuterebra maculosa, new species.

Female: Head black, more or less shining. Frons behind slightly less than the width of one eye, strongly broadening in front, the ocular margins nearly rectilinear, the anterior margin prominently arcuate; surface with a slight median groove and shallowly depressed each side of the middle, raised toward the ocelli and somewhat swollen anteriorly; a broad median zone velvety black and densely clothed with fine but stiff black hairs, laterally and in front subshining and with scattered black hairs inserted in fine punctures; a small white pollinose spot on middle of eye-margin, an elongate spot of the same nature anteriorly, reaching from eye-margin two-thirds way to the antennæ. Lower part of head more strongly shining, deeply and irregularly wrinkled on the cheeks, densely

black-haired about the mouth; facial depression highly polished, with but few hairs on its lower part; a yellowish pollinose transverse streak from near lower end of facialia to eye-margin, a large subquadrate yellowish pollinose spot resting against angle formed by posterior margin of cheek and eye-margin, a pair of very narrow pollinose stripes at sides of clypeal ridge. Mesonotum piceous-black, a bright ferruginous ill-defined spot close to humeri, a whitish line along transverse suture; surface strongly polished anteriorly, more dull posteriorly and with faint gray pruinosity; hairs very fine, black, their insertions minute, rather sparse anteriorly and becoming denser toward scutellum; humeri white-pollinose, lateral margins black-haired, a patch of yellow hair just above wing-insertion. Scutellum black and densely black-haired, some short yellowish bristles low down on posterior margin. Pleuræ black, with patches of brownish yellow hair on propleuræ, mesopleuræ, on posterior coxæ and at wing-insertion. Abdomen dorsally largely steel-blue, at the sides and beneath with yellowish brown pollinose ornamentation, clothed with fine, moderately dense, black hairs; first segment more shining than the others, wholly steel-blue above, narrowly margined behind toward the sides with yellowish pollen, beneath with a few pollinose irrorations; second and third segments blue in the middle, broadly pollinose at the sides and beneath to the narrow ventral zone, this pollinosity with numerous, irregularly distributed steel-blue dots which have a tendency to coalesce; fourth segment wholly brownish pollinose and with steel-blue dots, sparsest on the disk. Legs wholly black, only the hind femora with a fringe of brownish yellow hairs along ventral surface. Wings with the venation normal, hyaline, tinged with brown at base, along costa and very strongly toward the apex, the anal field clear. Alula deep brown and with a fine pale margin. Calypteres black, with short creases and narrow dull brown fringe.

Length: Body about 27 mm., wing 20 mm.

Two females: Ancon, Canal Zone, November 24, 1908 (A. H. Jennings); Cristobal, Canal Zone, August 14, 1911 (Dr. S. A. Davis).

Type, Cat. No. 19126, U. S. Nat. Mus.

The host is unknown, but no doubt will prove to be one of the rodents of this region.

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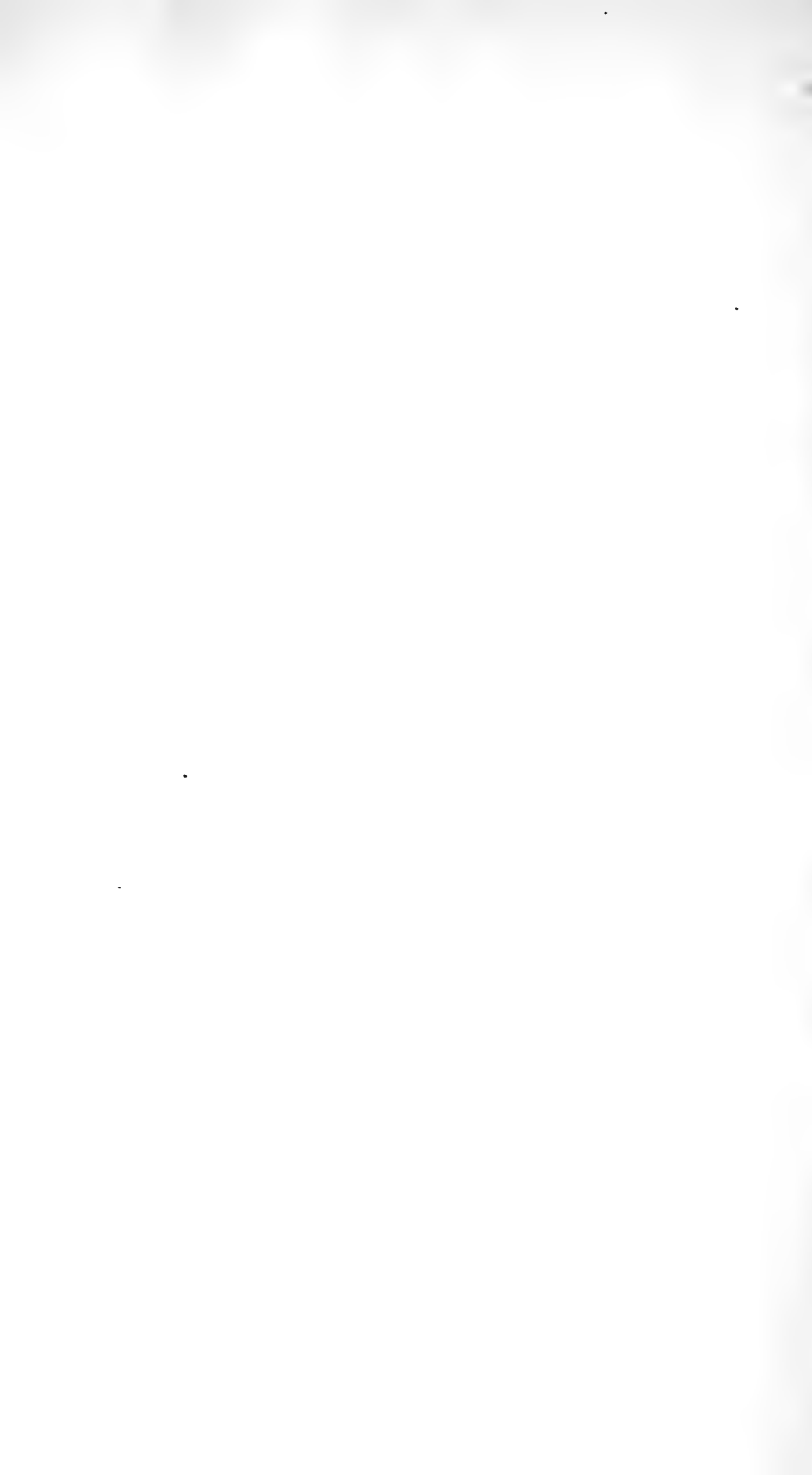
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